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INDUSTRY WEEK

Monsanto to Market Formulations in 15 Midwest States Under Own Label

ST. LOUIS — Monsanto Chemical Co. has announced that its Organic Chemicals Division will market agricultural chemical formulations under the Monsanto label in a 15-state midwestern area beginning in 1956.

The company is starting immediately to set up the necessary wholesale and retail distribution to the area for its new line of brand-name farm chemicals.

To date, 18 products have been added to the line which includes weed-killer formulations, brush-kill-

ers, insecticides and crop desiccants.

The initial sales region for Monsanto's farm chemicals includes Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Ohio and Wisconsin. Four sales districts have been established to service the area with district headquarters to be located at Minneapolis, Des Moines, Kansas City and Indianapolis.

Although a new name among farm chemical brands, Monsanto is a pioneer, insecticides and crop desiccants.

(Continued on page 20)

Southwestern Agro Chemical to Build 2½ Million Nitrogen Plant in Arizona

PHOENIX — Southwestern Agro Chemical Corp. has announced that it will build a \$2½ million plant near Chandler, Ariz., for production of anhydrous ammonia and other ammonia fertilizers.

Distribution centers for anhydrous ammonia are under construction at Casa Grande and the Chandler plant site, and a third will be built at Yuma.

All are scheduled for completion by Jan. 1.

Agrochem proposes to furnish delivery service to essentially all the 1,300,000 acres under irrigation in central and southwestern Arizona.

Agrochem is organized under the laws of Arizona to make ammonia

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Cities Service, Continental Oil Join Mid-South; Anhydrous Plant Planned

— See Photo on Page 20 —

MEMPHIS — The recently expanded Mid-South Chemical Corp. of Memphis plans a chain of anhydrous ammonia distributing centers along the Mississippi River from Minnesota to the Gulf and along the intercoastal canal from the Lower Rio Grande Valley to Florida.

Ellis T. Woolfolk, president of Mid-South, announced that Cities

Service Co. and Continental Oil Co., two of the nation's leading petroleum concerns, have joined Mid-South in the expansion.

The program calls for the expenditure of about 10 million dollars for transportation and distribution facilities on the part of Mid-South. It also calls for the erection of an anhydrous

(Continued on page 20)

Salt Lake Chemical Postpones Decision On \$8 Million Anhydrous Ammonia Plant

DALLAS — Plans for the erection of an \$8 million anhydrous ammonia plant by Salt Lake Chemical Co., Dallas, have been pigeonholed, according to J. B. Allinson, Dallas, secretary-treasurer of the firm.

The new plant was to have been built on the west side of Salt Lake City, Utah, where the company still holds an option on 100 acres of property in an industrial area.

In a telephone interview, Mr. Allinson told Croplife that plans are not "abandoned" for the construction of the NH₃ plant, but indicated that the matter at the present is in an inactive status. A decision about what direction the company will take is expected in the near future.

Announcement of the firm's original plans for construction of a Utah plant were made some 18 months ago, Mr. Allinson said.

Western Phosphates to Expand Super, Ammoniated Phosphate Plant in Utah

GARFIELD, UTAH — Western Phosphates, Inc., has announced it has developed plans for expansion of its multi-million dollar ammoniated phosphate and treble superphosphate plant at Garfield, Utah, to be completed early in 1956.

Hans Stauffer, president, said that

the expanded facilities are required to meet the heavily increased demand for phosphate fertilizers in the western area, despite the fact that the present plant is currently operating 120% of rated capacity.

Wilson & Geo. Meyer & Co. is sales agent for Western Phosphates.

Food & Drug Extends Effective Date for Pesticide Tolerance

By JOHN CIPPERLY

Croplife Washington Correspondent

WASHINGTON — The Food and Drug Administration last week announced that it had extended the effective date of the pesticide tolerance amendment until Oct. 31, 1955.

The agency said that it had decided it was not possible for it to handle all applications for tolerance level approval prior to the former July 22 amendment deadline, and thus an extension was made.

This extension of the deadline includes not only growing crops through

that period but also old crop grains which are now held in storage.

Even after that date it is unlikely, as in the case of wheat, that FDA would act to seize wheat treated with certain grain fumigants unless there exists a serious showing that residuals of these fumigants continue in the grain.

This practically will mean that even though a fumigant continues to be used by a warehouseman up to Oct. 31, 1955, it is unlikely that FDA would act to seize or libel such shipments from a warehouseman after that date.

It is believed by FDA that most of the grain fumigants now being used do not leave a residual tolerance that would or could be harmful, but that issue is now under study by an industry scientific committee.

Government officials report that the National Agricultural Chemical Association, headed by its executive vice president, Lea Hitchner, has a comprehensive study under way on this subject.

U.S. officials say that while it is broadly determined that grain fumigants do not leave a residual deposit on grain berries there is the remote

(Continued on page 21)

300 at First Day Of Great Plains Ammonia Meeting

By LAWRENCE A. LONG

Editor of Croplife

DES MOINES — A great future is in store for the sale of complete fertilizer mixtures, according to Dr. John C. Strauss, Liquidizer Corp. vice president, who addressed the meeting of the Great Plains Agricultural Ammonia Assn. here July 20.

Dr. Strauss said that "the time is here now for the sale of balanced mixed fertilizers." He discussed many aspects of the subject, including problems of manufacturing and application.

Some 300 persons registered on the opening day, and on July 21 the meeting was to continue with more discussions and a tour of experimental plots being conducted with Iowa State College, Ames.

Dr. C. J. Chapman, University of Wisconsin, told the group that the

(Continued on page 21)

NPFI Settles in New Washington Office

WASHINGTON — The National Plant Food Institute has announced that its change of address to 1700 K St. N.W., Washington 6, D.C. was effective July 22. The telephone number is District 7-0225.

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New Fertilizer Process Described To Research Group

Reaction Converts Calcium Metaphosphate Into Soluble Material

ST. PAUL — A new process for making fertilizer was described at the 1955 American Farm Research Assn. meeting on the St. Paul Campus of the University of Minnesota July 13-15 by James Seymour, Illinois Farm Supply Co. research scientist.

Mr. Seymour, who developed the process, said that in two or three minutes it converts water insoluble calcium metaphosphate into a soluble material.

He told the group that, up to now, use of calcium metaphosphate was most suitable as a phosphatic fertilizer on acid soils. Now, however, the

(Continued on page 21)

Illinois Adopts Bulk Fertilizer Registration Law

SPRINGFIELD, ILL. — A new law has been signed by the Illinois governor to require registration of commercial bulk fertilizer sellers with the State Department of Agriculture.



Dr. G. G. Williams

Olin Mathieson To Initiate Program Of Irrigation Research

LITTLE ROCK — Olin Mathieson Chemical Corp. is initiating a program of research on the agronomic and technical aspects of irrigation, Sam L. Nevins, vice president of the company's Western Fertilizer Division, has announced.

Supervised by the company's irrigation department, of which Thomas W. Crockett is manager, the program will be directed by Dr. G. G. Williams, Purdue University agronomist, who joins the company Aug. 1 as manager of irrigation research and planning.

The program has three objectives:

1. To determine the effect of irrigation in combination with high analysis water soluble fertilizers to promote maximum yields on various soil types.

2. To determine which crops and which soils can be most economically irrigated.

3. To develop improved irrigation equipment and methods.

While the program is expected to develop considerable data of benefit to farmers, it also will serve to guide the development of Olin Mathieson's irrigation engineering and marketing programs, the firm stated.

Dr. Williams since 1950 has been a full time staff member of Purdue University, engaged in research on soil moisture and plant growth relationships and in practical irrigation research on pastures, hay crops and corn.

He received his Ph. D. degree from Purdue in January, 1954, his thesis being, "The Effect of Soil Moisture on Plant Growth and Phosphorus Uptake." He is one of the authors of "Irrigation Guide for Indiana" and other publications in this field.

Born in Victoria, Texas, Dr. Williams was raised on farms near Goliad, Texas. He is a graduate of George Pepperdine College, Los Angeles. After naval service during World War II, he received a bachelor of science degree in general agriculture and a master of science in agronomy from the University of California.

On the basis of experiments started in 1943, the Mathieson system of supplemental irrigation was introduced in Eastern markets at the end of World War II. The company today is a major marketer of supplemental irrigation equipment.

MOSQUITO CONTROL

NEW BRUNSWICK — Dr. Bailey Pepper, Rutgers University entomologist, estimates that the New Jersey mosquito menace has declined 85 to 90% since 1932, because of improved extermination methods. The state's mosquito control program has cost \$30 million since it started nearly a half century ago, he said.

Pink Bollworm Quarantine Areas Merged into One

WASHINGTON—The areas in six southwestern states regulated because of the pink bollworm of cotton were merged into a single continuous regulated area, instead of being divided as now into heavily and lightly infested areas, the U.S. Department of Agriculture announced July 12. This change was effective July 12, and at the same time 20 Arkansas counties will be added to the regulated area.

Prior to 1952, the heaviest concentrations of the pest were in Texas counties along the Mexican border. Merging of the lightly and heavily infested pink bollworm areas is now necessary, the department says, because heavy infestations have been found sporadically throughout the entire regulated area. It is therefore no longer practicable to operate the quarantine on a two-area basis.

Coincident with these changes, the quarantine regulations were changed to redefine oil mill waste, provide additional means of moving edible okra—a host of the pink bollworm—from the infested area, and to modify the precautions applying to the movement of cotton harvesting and ginning machinery.

The pink bollworm is the most serious known enemy of cotton. It not only reduces the yield and quality of the lint, but is also destructive to the seed and may reduce the oil content by as much as 20 percent. Quarantines are imposed as a protective and control measure to prevent spread of the pest from infested to uninfested areas. Movement of unprocessed cotton, cottonseed and cottonseed products (and other articles in some cases) from a quarantined area is regulated, and all shipments are subject to treatment or inspection.

The entire states of Arizona, Arkansas, Louisiana, New Mexico, Oklahoma and Texas are included within the pink bollworm quarantined area, but the regulated area includes only Oklahoma and Texas and those parts of Arizona, Arkansas, Louisiana and New Mexico actually infested or threatened by the pest. With the announced change, areas in the latter states under regulation will be:

Arizona—Counties of Cochise, Graham, Greenlee and Santa Cruz, and all of Pima County except that portion lying west of the west line of Range 9 East.

Arkansas—Counties of Calhoun, Clark, Columbia, Conway, Crawford, Dallas, Franklin, Garland, Hempstead, Hot Springs, Howard, Johnson, Lafayette, Little River, Logan, Miller, Montgomery, Nevada, Ouachita, Perry, Pike, Polk, Pope, Scott, Sebastian, Sevier, Union and Yell.

Louisiana—Parishes of Allen, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Cameron, Claiborne, De Soto, Jefferson Davis, Lincoln, Natchitoches, Red River, Sabine, Union, Vermilion, Vernon and Webster.

New Mexico—Counties of Catron, Chaves, Curry, DeBaca, Dona Ana, Eddy, Grant, Hidalgo, Lea, Luna, Otero, Quay, Roosevelt, Sierra, Socorro and Valencia.

RESEARCH GROUP AWARD

NEW YORK—The Davison Chemical Co., division of W. R. Grace & Co., will receive the award of merit of the Associate Membership Division, Research Institute of America, for its use of plant committees with equal representation for management and workers. The annual award is presented by Research Institute for practical solutions to problems in the fields of human relations, company communications and manpower utilization.



Dr. George Selbie Gordon

U.S. Potash Names George Selbie Gordon As Research Director

NEW YORK—United States Potash Co. has announced the appointment of Dr. George Selbie Gordon as director of research. He is joining the staff of the firm immediately.

Since March, 1951, Dr. Gordon has been vice president of Titanium Zirconium Co., Inc., Flemington, N.J., having been with this company since its inception in charge of all technology and development. He was graduated from Phillips Exeter Academy in 1937, and from Princeton University in 1941 with a bachelor of arts degree in chemistry. He received the degree of doctor of philosophy in chemistry from Northwestern University in 1949. In May, 1943, Mr. Gordon was commissioned an ensign in the Naval reserve and thereafter was assigned to the staff of the U.S. Naval Research Laboratory at Washington, D.C., Chemical Division, as development engineer. From that post he received discharge in July, 1946, with the rank of lieutenant, U.S.N.R. He then took up graduate studies at Northwestern University.

From 1948 to 1951 he was engaged in research and development engineering with General Electric Co. at Pittsfield, Mass.

For the time being Dr. Gordon will be attached to the New York office of U.S. Potash Company. He presently resides in Princeton, N.J.; is married and the father of one son and one daughter.

University of Kentucky Gets \$11,500 Grant For Fertilizer Study

LEXINGTON, KY.—The National Science Foundation has awarded an \$11,500 contract to the University of Kentucky department of agronomy for research leading to more intelligent application of fertilizer and lime.

Announcement of the grant was made jointly by Dr. G. T. Webster, head of the department of agronomy, and Dr. Merl Baker, director of U. of K.'s Kentucky Research Foundation. The foundation will administer the contract, received from the Division of Physical Sciences of the National Science Foundation, Washington.

Dr. W. A. Seay, professor of soils at the university, will serve as chief investigator for the project. Research will deal with the identification of minerals in Kentucky soils and their effect in combining with or fixing phosphate fertilizers.

Under a research plan described by Dr. Seay, laboratory and greenhouse studies will be carried out to determine how adding lime or calcium and magnesium compounds will affect phosphorus fixation.

MONSANTO SALES SHOW INCREASE IN FIRST SIX MONTHS

ST. LOUIS—Sales of Monsanto Chemical Co. and its consolidated companies for the first six months of 1955 amounted to \$207,514,258, an increase of 22% over the sales of \$169,714,534 for the first six months of last year.

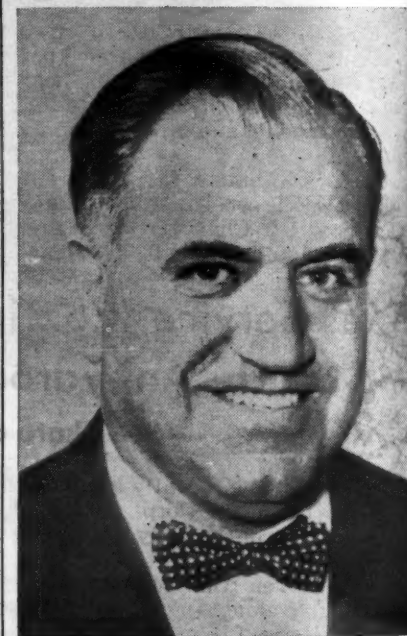
Net income for the first half of 1955 amounted to \$16,409,680, as compared to net income of \$11,597,710 for the first half of 1954.

After provision for preference dividends, this was equivalent to \$3.05 per share on the \$5 par value common stock, or \$1.02 per share on the new \$2 par value common stock after the three-for-one split approved by the stockholders on July 1, 1955. For the first six months of 1954, the adjusted earnings on the \$5 par value common stock were \$2.15 per share.

Western Agricultural Chemicals Assn. Sets Annual Meeting

SAN JOSE, CAL. — The annual meeting of the Western Agricultural Chemicals Assn. will be held Oct. 11, 1955, in Hotel Claremont, Berkeley, Cal. The all-day program will be announced later.

Membership in this association has increased 50% since Jan. 1, 1955. C. O. Barnard, executive secretary, expects an attendance of about 150 at the meeting.



Henry W. Rojas

Henry W. Rojas Named Vice President Of Witco Chemical

NEW YORK — Appointment of Henry W. Rojas as vice president of export marketing has been announced by Max A. Minnig, executive vice president of Witco Chemical Co.

Mr. Rojas will be responsible for all present international operations of the Witco Chemical Co. In addition it is expected that Mr. Rojas will increase Witco's activities in the export market by developing new outlets for the company's manufactured chemicals and carbon blacks, the firm stated. His headquarters will be in New York.

Mr. Rojas joins Witco after 24 years of worldwide chemical experience. For the past 21 years he has been with the American Cyanamid Co., most of the time as export manager of the industrial chemical division and manager of the dyes and chemicals department of the Cyanamid Interamerican Corp. He has travelled widely in Central and South America and Europe. He has been a member of the Export Managers Club of New York for over 10 years.



W. D. Van Aken

W. D. Van Aken Named Midwest District Sales Manager for Spencer

KANSAS CITY—Spencer Chemical Co. has announced the appointment of W. D. Van Aken, formerly Kansas-Oklahoma sales representative, to the position of midwest district sales manager.

The district is comprised of Missouri, Kansas, Oklahoma, Nebraska, Texas and Colorado. Mr. Van Aken, who has held the sales position in Kansas and Oklahoma since 1948, will be replaced in Kansas by J. R. Crail, who has been assistant to Claude Byrd, manager of Spencer's agricultural chemicals sales.

Mr. Van Aken has been with Spencer since 1947. A native of Kansas, he was graduated from Kansas State college in 1947, with a B.S. degree in business administration, following service in the air force, from which he was discharged as a major.

Mr. Van Aken is married, and they have two children, a son and a daughter. He will continue to make his home in Prairie Village, Kansas.

California Pest Control Bill Signed

SACRAMENTO—Gov. Goodwin J. Knight, California governor, has signed Assembly Bill 3026, which authorizes a structural pest control operator to employ field representatives in obtaining pest control work.

The measure, which becomes effective Sept. 8, 1955, also authorizes the hiring of unlicensed individuals to perform work on contracts covering food-destroying organisms only after negotiations or signing of a contract and before any job has been completed.

The bill also provides that each member of the State Structural Pest Control Board shall receive \$20 for each day's attendance at board meetings. The members presently receive no compensation. They also would be required by provisions of the new law to prepare a complete transcript of all proceedings to be open for public inspection.

Pest Quarantine Law Signed in California

SACRAMENTO — Assembly Bill 3023, passed by the recent session of the California Legislature, has been signed by Governor Goodwin J. Knight, making it effective as law on Sept. 8, 1955.

It authorizes the state director of agriculture and county agents to store under quarantine, pending treatment for shipment out of state, any material infested with the seed of any pest not of common occurrence in the county or locality in which found.

Potato Late Blight Forecasting Service Established in Aroostook County, Maine

WASHINGTON—An "on-the-spot" late blight warning service, established in Aroostook County, Maine, this year, is expected to help prevent extensive future losses on the Maine potato crop to this disease, the U.S. Department of Agriculture said recently.

Instituted by the U.S. Department of Agriculture and the Maine Agricultural Experiment Station, this service represents an extension of the department's cooperative Plant Disease Warning Service, which for seven years has been providing this nation's growers of fruits, vegetables, and tobacco with advance information on such destructive diseases as late blight of potato and tomatoes; downy mildew of watermelons, cantaloupes and lima beans, and blue mold of tobacco.

In the past years, late blight has

caused losses of as many as 4,700,000 bu.—10% of the total potato crop of Aroostook County.

Although this is the first time localized late blight forecasting has been attempted, USDA plant pathologists say that research trials of a similar nature in previous years indicate that the system will work efficiently. In addition, analysis of 52 years of weather records in which occurrence of late blight was related to certain combinations of rainfall and temperature, showed that presence or absence of the disease could have been correctly predicted 92% of the time.

Late blight will be forecast following 10 days of weather favorable to the disease (a total of 1.2 inches of rain and a mean temperature of 77 degrees F. or below).

Dr. Russell Hyre, plant pathologist with USDA's Agricultural Re-

search Service actively cooperating with the Maine Experiment Station, has been on the job, headquartered at Presque Isle, since June 1. By survey he has established the major sources of possible late blight infection—the "hot spots" usually associated with piles of cull potatoes.

The Maine Extension Service reports these conditions by press and radio, and at county-wide meetings to potato growers. This way, growers will be able to apply protective fungicidal chemicals to their crops before late blight infection can occur. Timely fungicidal treatment can help prevent infection, USDA points out.

Chemical Enterprises Names Three Directors

NEW YORK—Chemical Enterprises, Inc., has announced the election of three additional directors. They include William S. Kies, Jr., who was also elected chairman of the executive committee; George H. Walker, Jr., and R. James Foster.

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INSECT, PLANT DISEASE NOTES

Weevil Infestations Develop in Louisiana

BATON ROUGE, LA.—Serious boll weevil infestations are developing throughout the state. First generation adults are present in large numbers and there is now overlapping of this with the second generation in many fields of early planted cotton, particularly in the southern half of the state.

Infestations of *Heliothis* sp. are generally well below economic levels. Adults are beginning to appear in rapidly increasing numbers in fields and light traps and heavy infestations may be expected to develop within the next week to 10 days. Injurious infestations of cotton aphids have developed in some fields in Southwest Louisiana. Damaging populations of *Tetranychus* spp. are beginning to develop in some areas in the southern half of the state.

Rice stink bug, *Solubea pugnax*, populations are increasing in many fields of early planted rice in several sections of the rice belt. Increasing numbers of fall armyworm, *Laphygma frugiperda*, are being taken in light traps at Baton Rouge. Damaging infestations of this pest may be expected to develop on pasture grasses, sudan and late planted corn.

General, widespread infestations of the three-cornered alfalfa hopper, *Spissistilus festinus*, are present on alfalfa and clovers with as many as 203 per 100 sweeps on alfalfa in Bossier parish. Infestations range from 22 to 31 per 100 sweeps of white clover in Jefferson Davis, Acadia and East Baton Rouge parishes.

Boll Weevil Population Increasing in Tennessee

KNOXVILLE — The boll weevil population seems to be increasing in older cotton in the southern counties, the heavier populations being south

of Highway 64 around the Bolivar, Tenn., area. Lighter infestations extend north from McNairy County through Chester County.

Bollworms are present in most fields but are very light. Fleahoppers are causing some damage to young squares all over the area. Plant bugs are present in most fields but are doing only slight damage.—R. P. Mullett.

Boll Weevils Infest Fields in Georgia

ATHENS, GA.—Seventy-two fields in 18 South Georgia counties were inspected for the boll weevil and all were infested. Counts in 5 untreated fields ranged from 16% to 41% punctured squares with an average of 27.2%. Counts in 67 treated fields ranged from 1 to 13% with an average of 4.8% punctured squares.

Terminal bud inspections in 18 fields showed an average of 5.4 bollworm eggs and 4.5 worms per 100

terminals. Counts ran as high as 11 eggs and 11 worms (Colquitt County). Bollworm damaged squares averaged 5.6% in 5 untreated fields and 1.1% in 67 treated fields.

Twenty-six fields showed very light to light aphid infestations with one field showing medium and 1 heavy infestation. A trace of spider mites was found in 13 of the 72 South Georgia fields.—C. R. Jordan.

Cotton Insects In North Carolina

RALEIGH, N.C.—Of 101 treated fields examined for boll weevils, 8 had infested squares; of 26 untreated fields examined, 25 had infested squares. Therefore, with the new brood of weevils coming up, increased square and boll damage may be expected in all areas.

Bollworms have been active in Hoke, Scotland, Montgomery and Wayne Counties. Damage in most cases is increasing. We expect considerable damage from these pests in the future, when the corn becomes less attractive to them.

Spider mites or red spiders have been reported from Scotland, Union and Northampton Counties.

Up to 60,000 Acres Infested in New Mexico

COLLEGE STATION, N.M.—Grasshoppers are still abundant in some areas in the state, with medium to heavy infestations on cultivated crops in Taos and Lea counties. Range grasshoppers are numerous on the Ysleta Indian Reservation, and a new grasshopper outbreak has been reported in Union County. About 40,000 to 60 thousand acres are infested. About 232,000 acres in Lea County have been treated with aldrin.

Fall Armyworm Is Reported on the Move

GAINESVILLE, FLA.—Light to moderate infestations of fall armyworm have been reported on St. Augustine grass at Tampa, Fla. The numbers averaged one larva per square foot. Chinch bugs, averaging 200 to 300 eggs, nymphs and adults per square foot, were also infesting St. Augustine grass in the Tampa area.

In Lake County, yellow-headed leafhoppers averaging 10 adults per 100 sweeps, were found and the corn leaf aphid, in all stages, averaging many per leaf, infested corn at Lake Butler in Union County.

Granulate cutworm in the larval stage, completely destroyed a 4-acre field of cowpeas at Hague, in Alachua County. The cowpeas followed a crop of cucumbers and an inspection of the old cucumbers remaining in the field showed an average of 6 to 100 larvae under each cucumber.—H. A. DeMark.

Corn and Beans Under Grasshopper Attack

AMES, IOWA — Grasshoppers are big news this week. As small grain and hay harvest begins, hoppers are moving from oat fields to adjacent corn and beans. Farmers are finding that legume seedlings in oats have disappeared.

Some 40 grasshoppers per square yard in unmowed alfalfa and clover have been reported in southwestern Iowa. Of these, 10% are differential 15% two-striped, 30% red-legged and 45% lesser migratory hoppers ranging in age from half to full grown. Populations in northern Iowa are lower, being about 15-20 per square yard. Here, red-legged hoppers are dominant.

A survey made in 27 counties last week indicated that the south portion of the state had 135 European cornborers per 100 plants and that 47% of the corn in that area was infested by them. The central portion counted

ome 66 borers per 100 plants, a 35% infestation. Northern areas had 100 plants with 135 borers. The infestation was heavy, but the brood trouble was not too bad. Moths will be a problem, and the peak period for making the job of treatment is now.

Replies for brood bore nearly 1 million. Thirteen percent of this (dom) had

Chinch bugs in Decatur, W. Van Buren and Iowa. —Har

Mosquito Numbers

NEWARK, N.J.—Mosquitoes are a problem here, particularly in the extension of the city. People are not happy about the way the Department of Health is handling the situation. The real problem is the extension of the city, which is causing the mosquito problem. Some 38 vials of DDT were found in the city, and they are taking steps to control the situation.

Chinch Bugs In South

CLEMSON, S.C.—Chinch bugs have been a problem here for some time. In the season in grain sorghum, pearl millet, and any time the crops are in the field, the bugs are a problem. For the first time, the bugs have been found in the area. Farmers are taking steps to control the situation.

In New York, the corn plan is satisfactory. The application of DDT has also been successful.

Black flies are a problem here. The flies are a nuisance to the people. The flies are a problem in the normal. The flies are a problem in the late 1920's, and they are a problem in the weather. The flies are a problem in the weather.

During the week, the flies are a problem. The flies are a problem in the weather. The flies are a problem in the weather.

Experimenters are taking steps to control the situation. The flies are a problem in the weather. The flies are a problem in the weather.

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- allows direct combining of crops
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- (WRITE FOR BULLETIN A-1)

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*Endothal is the accepted generic name for 3,6 endoxhexahydrophthalic acid. The manufacture and use of this product is protected by one or more of the following U.S. Patents: 2,550,494; 2,576,080; 2,576,081; 2,576,083; others, pending.

high as 66 borers per 100 plants, making a 35% infestation, while the northern area had only 60 borers per 100 plants with a 26% infestation.

The infestation is lower than last year's, but poses a threat of second brood trouble on late planted corn. Moths will emerge throughout August, and there probably won't be a peak period of egg-laying. This will make the job of timing second brood treatment more difficult.

Replies from 38 counties on first brood borer control indicate that nearly 1 million acres were treated. Thirteen per cent of the fields surveyed this week (chosen at random) had been sprayed.

Chinch bugs are reported from Decatur, Washington, Appanoose, and Van Buren counties. A few mature bugs were seen in corn in central Iowa.—Harold Gunderson.

Mosquitoes in Large Numbers Buzz Delaware

NEWARK, DEL. — A plague of mosquitoes has been pestering Delaware people during the past weeks, particularly in the Lewes-Rehoboth-Bethany beach area. L. A. Stearns, extension entomologist, advised the people not to blame the State Highway Department's control operations which usually reduce the mosquito population to a point below the annoyance level.

The real culprit, he says, is the rain which fell in excessive amounts during June, totalling some seven inches. Some 38 varieties of mosquitoes are found in Delaware, Mr. Stearns says, "and they took full advantage of this opportunity," he observed.

Chinch Bugs Lead Pests in South Carolina Tally

CLEMSON, S.C. — Chinch bugs have been more of a problem this season in the production of corn, grain sorghum, and annual grazing of pearl millet and sweet Sudan than at any time since new organic insecticides have become generally used. For the first time, widespread outbreaks have occurred in the Pee Dee area. Farmer experience with cotton dusts of heptachlor, aldrin and BHC, all containing DDT, and with 1% parathion dust applied around the base of plants for chinch bug control has been good.

In Newberry County, heptachlor, applied as a spray to the base of corn plants, has been unusually satisfactory. In the midwest, dieldrin applied as an overall spray has also performed exceptionally well.

Black fire, a bacterial disease, and flea beetles are causing more damage to the flue-cured tobacco crop than normal. More black fire is being observed than at any time since the late 1920's, and more flea beetles than at any time since 1938. Cool, damp weather early in the season probably accounted for the outbreak of black fire, and one of the more widely used hornworm chemicals apparently has failed to control flea beetles.

During the past two years the lespedeza webworm has seriously damaged sericea lespedeza not only in the Piedmont but elsewhere in South Carolina. A report from Greenville County states: "On the farm of F. J. Ayers the worms completely destroyed the hay crop in this field last year, and it looks as if they're going to do the same thing this year."

Experiments conducted by W. F. Chamberlain, associate entomologist, Clemson Experiment Station, indicate that 5% DDT dust at the rate of 25 lb. an acre will control this pest. (At least five or six weeks should elapse between the time of application and time of cutting the lespedeza for hay.) Recommended cotton dusts containing 5% DDT or 20%

toxaphene dust give satisfactory control.

Timing of applications is important, and it is believed that early-season applications will give good control for the rest of the season, although there might be a slight migration from other fields. Light trap records, reported by Experiment Station entomologists, indicate that the adults of the lespedeza webworm are abundant in the Clemson area and have been for some time.—S. C. Stribling.

Corn Pests Abundant in Virginia

BLACKSBURG, VA. — Damage to corn in most parts of the state by the earworm and European corn borers is reported. Earworms also are causing heavy damage to tomatoes in Eastern Virginia's truck crop area.

Neither fall armyworms, nor the egg masses from which they come, have been found in Virginia corn fields as yet. However, outbreaks are expected this month. Japanese beetle outbreaks, however, are believed to be heavier this year than during the past two or three years. New infestations reported this week include those in Botetourt and Washington counties.

The cotton insect situation looks good to date, but farmers are warned that trouble could develop quickly if weather conditions become favorable for the boll weevil. Mimosa webworms are infesting mimosa trees and the plant should be watched carefully in all parts of Virginia so control measures can start before heavy damage is done. Tobacco insects are causing little trouble currently.

Blister beetles are beginning to be troublesome in some gardens in southwestern Virginia. They frequently infest potatoes, tomatoes and beans in home gardens after they have devoured the preferred host plants nearby.

Mexican bean beetles, bean leaf beetles, yellow striped armyworms and the larvae of the gray hair-streaked butterfly are damaging snap beans in the truck crop area. Also in the same area, Colorado potato beetles, potato leaf hoppers and potato flea beetles are damaging potatoes. Some cabbage crops are showing severe injury from cabbage loopers and imported cabbage worms.

Minnesota Counts Its Grasshopper Population

ST. PAUL, MINN. — Grasshopper populations of threatening proportions have been reported in northwestern Minnesota. Many grassy field margins have infestations of migratory hoppers, red-legged and two-striped, with the red-legged being most numerous.

Lake of the Woods County, and other areas near by, also report heavy populations of grasshoppers. This is true also around Bemidji and Cass Lake. Red Lake and Pennington counties have reported from 10-15 hoppers to the square yard in grassy field margins.

Reports from central and west central Minnesota indicate many hoppers in field margins and cases of movement into soybeans and corn. The same conditions exist in east central, southeast and south central regions. "Infestations such as these should not be taken lightly," the State Entomologist's office warned growers in the state.

Sweet clover weevil adults were reported emerging in large numbers from a fallowed field in northwestern Minnesota. The bugs are now moving into new seedlings and are stripping the edges of older stands. Considerable damage may be expected if controls are not carried out.

Large numbers of corn leaf aphid are present in many late barley fields in Kittson, Roseau, Marshall,

Pennington, Red Lake Falls and the northern part of West Polk County. This aphid caused little apparent injury on older barley in more southerly counties. Infestations disappeared about two weeks after first noted. There is little information on direct plant damage by this aphid or the effect of large numbers of the insects on small plants. However, fields of late barley in the area are showing tip yellowing and browning. Plants in these fields are nearly 100% infested with aphids. Some fields show spotty damage.

Some damage is associated with low areas in fields, and root rotting organisms may be responsible. This aphid has been known to transmit yellow dwarf disease which appears to be present in many of these fields. Where large aphid populations are present and grain damage not apparent, control is probably good insurance.

Corn Borer Population Increases in Illinois

URBANA, ILL. — Corn borers are still migrating on the corn plants. Many of them are establishing themselves in the stalks, but it is too late to apply insecticide now.

The size of borers varies from small to full-grown, but most of them are about $\frac{1}{2}$ to $\frac{3}{4}$ grown. Occasional pupae have already been found in central and north-central Illinois. At present it appears that second-generation moth flight will begin in late July or early August and the first egg-laying will occur in early August.

We cannot predict the extent of the second generation at this time, but everything now indicates that it will be heavy.

The grasshopper population still varies considerably from one area to another. However, this past week grasshoppers became more noticeable in hay fields in the north third of the state than in other areas. If treatment becomes necessary, use aldrin or heptachlor, but do not apply either one to feed crops within two weeks of harvest. Use dieldrin or toxaphene only where residues will not be a problem. (Remember that 17 nearly mature grasshoppers per square yard in a 40-acre hay field can eat a ton a day.)

Some areas, particularly in northeast Illinois, are experiencing occasional severe migrations of chinch bugs from rye, barley, wheat, and in some instances oat fields. Dieldrin at $\frac{1}{2}$ lb. an acre is recommended for control.—H. B. Petty.

Pest Increase Noted in Colorado Report

FORT COLLINS, COLO. — Insect numbers are increasing in several of Colorado's important farm crops as the growing season progresses. Increased insect activity in many grain and field crops, as well as in truck gardens and fruit orchards has been indicated.

Codling moth has made a rapid build-up during the past month in orchards throughout Delta, Montrose and Mesa counties. The worm of this insect is especially numerous.

In Otero County in southeastern Colorado, lygus bugs collected in light traps reached peak numbers for the season during the past week. Alfalfa fields in Yuma and Adams counties also are reported infested with large numbers of these bugs.

Elsewhere, the Mexican bean beetle has been active. It is reported causing severe damage to beans in both Larimer and Weld counties. Dr. L. B. Daniels, chairman of the detection committee and chief entomologist for the Colorado A&M Experiment Station, reports that growers there are applying chemical control measures.

Western wheat mite is causing

heavy damage to Moravian barley in Rio Grande County. Control measures are being recommended consisting of aerial applications of 2% parathion and sulfur in dust form.

High temperatures have slowed down the build-up of tomato psyllid population in Pueblo, Otero, Bent, Crowley and Prowers counties. Eggs of the tomato fruit worm and the tomato horn worm are reported present generally throughout commercial plantings of tomatoes in Bent, Pueblo and Otero counties.

The first report of corn earworm for the season in field corn came last week from Otero County.

Aster leaf hopper has been collected in light traps at Rocky Ford in the Arkansas Valley. This insect is the carrier for aster yellows virus which infects carrots, onions, potatoes and a number of other plants. Numbers collected took a big jump during the past week.

There has been a sizable increase the past week in numbers of insects which affect stored grain. The lesser grain borer has been reported in large numbers in farm storages.

Grasshopper Threat Grows More Acute

COLUMBIA, MO. — Grasshoppers continue to be the big threat. There seems to have been considerable increase in spraying during the past week, and this will undoubtedly continue to increase as crop damage becomes heavier each day.

So far, very little disease has shown up among the hoppers... not enough in any community for disease to be a factor in reducing hopper numbers. The one big factor which has kept crop damage relatively low for the number of hoppers in the state, is the adequate rainfall. There is an abundance of grass foliage for the hoppers to feed on without moving into croplands.

Damage from European corn borer is becoming evident over the northern half of the state and also in the boot-heel area. In the southeast area, most of the larvae that can be found are practically full grown, many have pupated and still more have already emerged as the adult and deposited eggs.—Stirling Kyd and Geo. W. Thomas.

Orchard Pests Noted in Indiana

VINCENNES, IND. — Second brood codling moth larvae are still entering unprotected fruit. In experimental plots new injuries are readily found where DDT deposits are more than two weeks old. A cover spray applied at this time, following the heavy rains, is needed to assure protection for the remainder of second brood activity.

Although frequent showers have kept two-spotted mites from showing, populations are increasing in frequency in apple orchards so that orchards must be surveyed carefully in order to detect their presence and apply preventive measures before bronzing occurs.—D. W. Hamilton.

Pastures Do Best On Complete Diet

NEW BRUNSWICK, N.J. — Balanced fertilization of grasses is a must if a farmer expects to get the most for the dollar spent, says John E. Baylor, extension crop specialist at Rutgers University.

He cites Virginia research where orchardgrass fertilized with 400 lb. 0-10-10 produced 50% more forage than that which received no fertilizer.

Yields went up $2\frac{1}{4}$ times from the use of nitrogen alone at the rate of 100 lb. an acre. But with 100 lb. nitrogen and 400 lb. 0-10-10 the yield was $4\frac{1}{2}$ times that from the unfertilized plot.

Wisconsin Anhydrous Dealers Form Organization; 5% Annual Gain in Nitrogen Use Predicted

MADISON—Wisconsin dealers in anhydrous ammonia for direct application completed plans at a meeting in Madison July 11 to form a state trade association.

The association, which will be concerned largely with education, anticipates working more closely with state officials and the University of Wisconsin extension division on mutual problems.

Roland Strid of the Strid Grain Co., Green Bay, was named chairman of a committee which will draw up charter provisions and by-laws and set a date for their consideration by the group.

Others on the committee are G. A. Davidson, Coulee Chemical Co., La Crosse; Del Christiansen, Lein Oil Co., Janesville; Robert Howard, Baldwin (Wis.) Liquid Fertilizer Co., and Bruce O'Connor, O'Connor Oil Company, Fond du Lac.

E. W. Thomas of the Farm Service Corp., Boonville, Mo., a past president of the Agricultural Ammonia Institute and chairman of its insurance committee advised the group on how to study their insurance problems.

"Most dealers do not know the coverage they should carry," he said. "Nevertheless, they are like every other business in needing this protection." Advice on insurance coverage is available from the AAI, Mr. Thomas said.

Frank J. Bishop, chief boiler inspector for the Wisconsin State Industrial Commission, discussed the anhydrous ammonia code which the commission will issue later this year.

Jack Criswell of Memphis, executive secretary of the national Agricultural Ammonia Institute, assisted the group in formulating its organization plans.

Dr. Arthur M. Smith of Baltimore, agricultural director, Olin Mathieson Chemical Corp., spoke on the outlook for the anhydrous ammonia industry.

Fertilizer nitrogen consumption will increase approximately 5% annually for the next ten years, Dr. Smith told the distributors. With proper industry promotion, he said, the annual increase can be 6% a year.

Labeling anhydrous ammonia the



DISCUSS NH₃ GROUP—A. M. Horehled of Madison, Wis., Olin Mathieson Chemical Corp. (left), looks over plans shown by G. A. Davidson, Coulee Chemical Co., La Crosse, for the formation of a Wisconsin state association of anhydrous ammonia distributors. Mr. Davidson is a member of committee which is drawing up by-laws for the organization, following agreement reached at Madison July 11.

"number 1 nitrogen fertilizer in the United States," Dr. Smith said that no other nitrogen fertilizer supplies as many pounds of nitrogen to farms of the United States as does anhydrous ammonia.

"It's held its own in every area where used and increased in volume in many areas. It has given good results in the field during the season in which it was applied and has proved its carryover value. Soil chemistry research will show it is more of a soil builder than any other form of nitrogen fertilizer," he said.

The greatest need in the industry, Dr. Smith said, is for improved application equipment. He said recent innovations have been minor and insufficient.

The increase in consumption will come about, Dr. Smith said, in three ways:

1. More farmers will use direct application nitrogen fertilizer. In many areas, less than half of the farmers now make separate application of nitrogen fertilizers.

2. More farmers will use more nitrogen per acre.

3. More farmers will use more anhydrous ammonia on more crops.

Among the reasons for this increased use of nitrogen, Dr. Smith cited competition between farmers and between farming areas to produce more crops at lower unit costs.

One of the greatest potentials for increased anhydrous ammonia sales, Dr. Smith believes, is in pasture development.

Grassland farming will use more nitrogen when it is really explained to livestock farmers, he said. In any market milk area, the milk producer's contract depends on the volume of milk production in the lowest production month. Fertilized pastures raise his lowest monthly level and thereby profit the milk producer. Further, the farmer can reduce his mill feed bill by fertilizing pastures and producing more hay, grass silage and pasture grass for grazing.

Dr. Smith said that the use of anhydrous ammonia is a "salvation" for the farmer because nitrogen shipped from the factory as anhydrous ammonia is nitrogen in its lowest cost form.

"Because of its economy, anhydrous ammonia will continue to take over a larger part of the total nitrogen market," he said.

"Application equipment is the biggest roadblock to a more rapid sale and distribution of anhydrous ammonia. The opportunity to develop more efficient equipment is apparent."

Dr. Smith suggested the following as promising fields for research:

1. Studies to develop better placement of anhydrous ammonia for all crops.

2. Comparative field studies of devices used to seal ammonia in the soil at time of application.

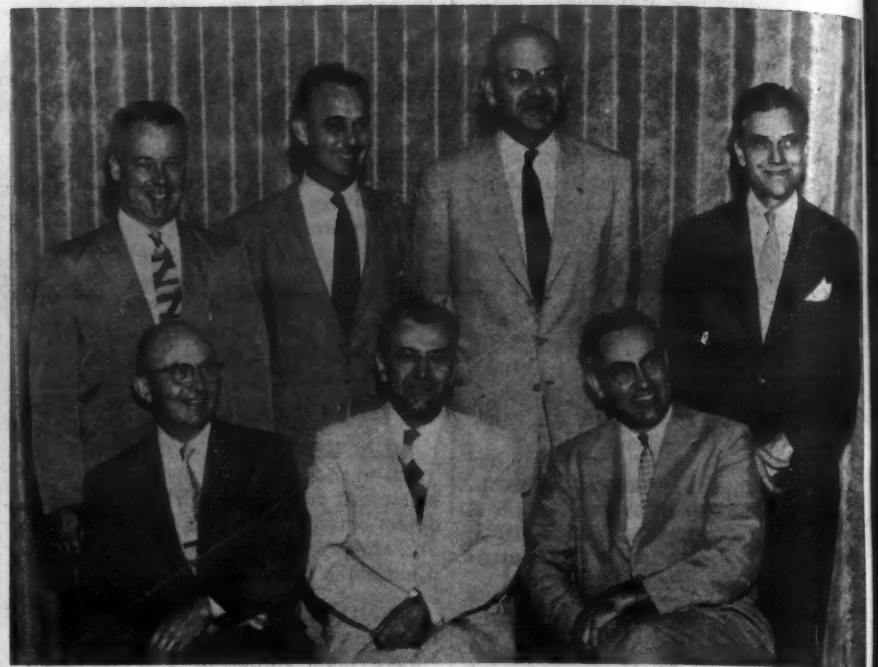
3. More research on applicator design by farm implement companies.

4. Studies by individual farmers of new ways to apply anhydrous ammonia with tillage implements such as plows, cultivators, and harrows.

5. Field plot research on times, rates and methods of application for maximum profit per acre.

6. Further studies of the physical conditioning effects of anhydrous ammonia on soils in different conditions.

7. Studies on ways to use to advantage the biological effects of anhydrous ammonia as a fungicide, nematocide, and in stimulating beneficial soil bacteria.



SOUTHERN CONTROL OFFICIALS—Members of the Executive Committee of the Association of Southern Feed and Fertilizer Control Officials are shown above as they gathered at the 13th annual meeting of the organization in New Orleans recently. In the front row, from left to right, are R. W. Ludwick, New Mexico, vice president; Dr. M. P. Etheredge, Mississippi, president, and Bruce Poundstone, Kentucky, secretary-treasurer. In the back row are E. A. Epps, Jr., Louisiana, past president; H. H. Hoffman, Florida; Bruce Cloaninger, South Carolina, and N. F. Franklin, Virginia. Dr. E. W. Constable, North Carolina, member of the committee, was not present when this photo was taken. A story of the meeting appears on page 2 of the July 11 Croplife.

Leafhopper Control Stressed at Annual Indiana Field Day

LAFAYETTE, IND.—Hoosier farmers learned the latest developments in the war against leafhopper damage on alfalfa during the annual field day at Purdue University's Sand Experimental Farm near Culver July 19.

M. Curtis Wilson, Purdue entomologist, reported that, in 1954, alfalfa treated to control leafhoppers averaged 45% more growth two weeks after cutting than alfalfa not sprayed. Research at the Purdue Sand Farm indicates that leafhopper control may be a major factor in keeping a stand of alfalfa from running out, Mr. Wilson said.

His research has shown that where leafhoppers were treated, a carryover effect on alfalfa vigor followed in the spring. Alfalfa sprayed to control leafhoppers recovered early in the spring and produced more hay per acre on the first cutting than did the unsprayed crop.

A chalk talk on "Insect Problems in Northern Indiana" by Glen Lehker, extension entomologist at Purdue, opened the field day.

In addition to alfalfa plots, three irrigation exhibits were among nine demonstrations scheduled. Results of four years' work with irrigation of corn were viewed by farmers.

An added feature of the event was a demonstration of the latest controls for field rodents under the direction of W. D. Fitzwater, mammal control supervisor at Purdue.

Arkansas Appointments

FAYETTEVILLE, ARK.—Dr. Robert E. Frans has been named assistant professor and assistant agronomist, and Joe P. Wells has been appointed graduate assistant in the Department of Agronomy of the University of Arkansas.

Dr. Frans will carry on research into methods of controlling weeds in cotton and soybeans and will also teach a course in weeds and their control. Mr. Wells will assist with research on the magnesium needs of Arkansas soils while working toward his M. S. degree. This research is sponsored by a grant from the International Minerals and Chemical Corp.

Thomas J. Desmond Named to Chicago Post by Du Pont

WILMINGTON—Thomas J. Desmond has been appointed Chicago district sales manager of the Du Pont Co.'s Grasselli Chemicals Dept., the company has announced. He succeeds W. James Latimore, who will move to Wilmington on special assignment.

Mr. Desmond has been Boston district sales manager since 1951. He joined Du Pont in 1935 as a chemist at the Grasselli Works, Linden, N.J. After several years as a production supervisor there, he became a member of the Grasselli sales organization, and had been assigned to sales offices in Wilmington, Milwaukee and Minneapolis before going to Boston. A native of Portland, Me., he was graduated from the University of Maine in 1933 with the degree of bachelor of science in chemical engineering.

Mr. Latimore, Chicago district sales manager since 1952, joined the Grasselli Sales Division in 1936. Before going to Chicago, he had been assistant district sales manager in Cleveland and district sales manager in Houston. He was born in Herminie, Pa. and attended the University of Pittsburgh and Thiel College.

100 Attend Meeting Of Western Agricultural Chemicals Assn.

LOS ANGELES—More than 100 attended the spring meeting of the Western Agricultural Chemicals Assn. held at Hotel Clark here.

Speakers included Dr. George C. Decker, University of Illinois, who talked about "Integration of Industrial and Governmental Research on Pesticides," and John F. Neace, Marsh Aviation Co., whose topic was "Economic and Practical Fallacies of the Package Deal."

During the business session members approved newly amended constitution and by laws.

Among the guests at the meeting were Larn Salas, Ministry of Agriculture, Costa Rica; Dr. L. D. Christenson and Dr. L. F. Steiner, U.S. Department of Agriculture, Hawaii; W. E. Stone, USDA, Mexico, and John T. Coyne, USDA, Washington.

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YIELD, PROTEIN CONTENT BOOSTED

Iowa Tests Show Residual Value of Nitrogen on Corn

EDITOR'S NOTE—The following article is reprinted from the current issue of the Nebraska Experiment Station Quarterly. The article was written by F. V. Pumphrey, assistant agronomist, and Lionel Harris, superintendent, both from Scott Bluff, Neb. Experiment Station.

Nitrogen fertilizer will help produce high yields of corn on irrigated soils that are low in nitrogen and organic matter.

If the nitrogen is not completely used during the year it is applied, it will benefit the next year's crop. Besides boosting yields, nitrogen fertilizer will increase the protein content of the corn grain.

The relationship between corn yields and nitrogen application in years of favorable weather is clearly shown in results of experiments at the Scotts Bluff Experiment Station. These experiments were conducted on irrigated land that was low in organic matter and available nitrogen.

110 Bu. per Acre

An average yield of 39 bu. per acre was produced on the nonfertilized area that was used as a check plot (see figure 1). Where 40 lb. nitrogen was applied per acre, the yield averaged 72 bu.

Yields were 93 and 110 bu. per acre respectively where 80 and 120 lb. nitrogen were applied. This makes yield increases of 33, 54, and 71 bu. for 40, 80 and 120 lb. of nitrogen per acre.

Time of nitrogen application (between plowing and last cultivation) had little influence on yield, especially at the higher rates. At the low rate, it was better to apply the nitrogen when the corn was 12 to 36 inches tall. At this stage of growth the corn makes its greatest demand for nitrogen.

To get a complete picture of the value of the nitrogen fertilizer, the residual value to corn was determined the following year. The value to this second corn crop was directly proportional to the quantity of nitrogen applied (figure 2), but was influenced by the time of application.

Yields were increased 5 bu. per acre where 40 lb. nitrogen had been applied the previous year. Where 80 and 120 lb. nitrogen had been applied, the yield increases were 11 and 18 bu. per acre.

The residual influence increased according to the delay in application the previous year. In one experiment where the fertilizer was applied so late that the corn could not make full use of the nitrogen that year, the next year's residual yield increases were: 28 bu. for 40 lb. nitrogen; 48 bu. for 80 lb. nitrogen; and 55 bu. for 120 lb. nitrogen.

Weather Makes Difference

Climatic conditions influence the value obtained from nitrogen fertilizer applied to corn. During the unfavorable growing season of 1951, two fertilizer experiments were conducted. One was on soil of low productivity and the other on soil of medium productivity.

Because of the unfavorable season for corn, the response to nitrogen in 1951 was small in both experiments. However, the earlier applications tended to be better than the later ones on the soil of low productivity.

In 1952, when weather was more favorable, the residual value of the nitrogen fertilizer applied in 1951

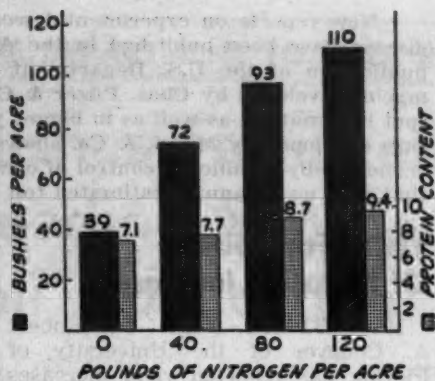


FIGURE 1—Yields of corn and protein content as influenced by various rates of nitrogen.

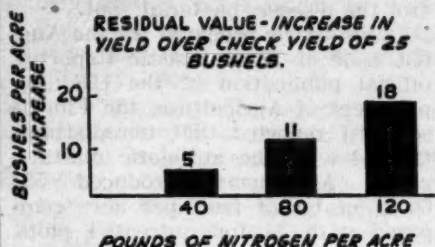


FIGURE 2—Increase in yield of corn due to nitrogen applied previous year.

was very large, especially at the higher rates.

Yield increases ranged from 37 to 56 bu. per acre where 120 lb. nitrogen had been applied the previous year, and from 10 to 33 bu. where 80 lb. had been applied.

Even on the soil of medium productivity where the yield of the nonfertilized corn was 92 bu. per acre in 1952, the residual value was large. Residual yield increases from 80 and 120 lb. nitrogen were 21 and 34 bu. per acre.

Nitrogen fertilizer increased the protein content of the grain—an important consideration to livestock feeders.

As shown in figure 1, the crude protein content of grain from the nonfertilized plot was very low, 7.1%. The protein contents of grain from plots fertilized with 40, 80 and 120 lb. nitrogen per acre were 7.7, 8.7 and 9.4% respectively.

Crops and Soils Day Attracts 250 In Minnesota

ROSEMOUNT, MINN. — The annual crops and soils day of the Minnesota Agricultural Experiment Station was held here July 13 to show some 250 guests the results of numerous tests in fertility, weed control and general land management.

Some ten tractor-pulled trailers transported the visitors through the fields of corn, alfalfa, pastures and flax, where tests are under way for fertility, longevity of alfalfa, erosion, beef-grassland projects and control of plant diseases and weeds.

Corn production experiments are being conducted on naturally fertile plots which, without additional fertilizer, yield as high as 105 bu. an acre. By adding complete fertilizer, plus additional nitrogen side dressing, yields were as high as 133 bu. an acre, it was reported.

SURVEY CREW OUT

NEW BRUNSWICK — A survey crew has started survey work to check results of a 350 acre white-fringed beetle control program in South New Jersey.

Team up your fertilizers with...

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THE
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FERTILIZER BORATE—High Grade, because of its higher analysis ... and lower moisture content (5 mols) ... saves you important money. In formulating mixtures containing borax, only 82.9 lbs. of FERTILIZER BORATE—High Grade are required for each 100 lbs. of Borax that you guarantee. You figure the savings!

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121%

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specific needs

COLEMANITE—High Grade...a slowly soluble lime borate for light and porous soils, or in regions of high rainfall. Content of B_2O_3 ranges from 32% to 35%. Bulletin PF-2.

POLYBOR-2...Highly soluble. Contains 20.5% Boron or 66% B_2O_3 . Applies as a spray or dust; compatible with insecticides and fungicides currently in use and may be applied in the same solutions. Bulletin PF-4.



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H. Vise Miller New Armour Fertilizer Works Executive Vice President

ATLANTA—W. E. Shelburne, president of the Armour Fertilizer Works, has announced that H. Vise Miller has been named executive vice president of the Armour Fertilizer Works and assistant vice president of the parent Armour & Co.

Mr. Miller was born in Nashville, and joined the Nashville Division of the Armour Fertilizer Works in 1923. He became a salesman for that division in 1933, and three years later was named assistant division manager.

In December, 1944, Mr. Miller was appointed manager of the Houston, Texas, Division where he remained in that capacity until coming to the Atlanta general office in June, 1953, as area sales manager.

Armour Fertilizer Works has 31 branch plants and offices in the U.S., Cuba and Puerto Rico.

Delaware Field Day

NEWARK, DEL.—The annual Farm Field Day at the Delaware Agricultural Experiment Substation on the Georgetown-Laurel Road will be held Aug. 3. New experiments in 1955 include "Mounded Versus Level Rows for Tomatoes," "Insecticides on Sweet Corn and Lima Beans for Soil Infesting Insects," "Control of Downy Mildew Disease on Cucumbers and Squash," "Comparison of Miticides on Apples," and "Crop Rotation and Disease Control."

No Cause for Alarm Over Clover Aphid, Entomologists Say

SACRAMENTO—Although the yellow clover aphid is spreading northward and will probably infest all alfalfa-growing areas in the State of California eventually, a statement issued by entomologists on the Berkeley and Riverside campuses points out five factors in favor of the growers:

1. Growers can still produce satisfactory alfalfa even after the insect attacks, because excellent chemical controls exist.

2. Nature already controls the aphid to some extent through ladybugs, natural enemies of the aphid.

3. Other natural enemies are now being sought in foreign countries.

4. Resistant varieties of alfalfa may result from work now going on at the University's Davis campus.

5. Entomologists are watching the suspected areas. Growers will be informed if the aphid is found. Until then they should take no measures.

The yellow clover aphid, for years a pest in eastern and middle western states, was discovered in New Mexico in 1954 and quickly spread to other western states.

TO JOIN CO-OP STAFF

WASHINGTON—Quentin Reynolds, who retired last March 4 after 25 years as general manager of Eastern States Farmers' Exchange, West Springfield, Mass., will join the staff of the American Institute of Cooperation as national finance chairman Aug. 1.

THE MARKLEY LABORATORIES

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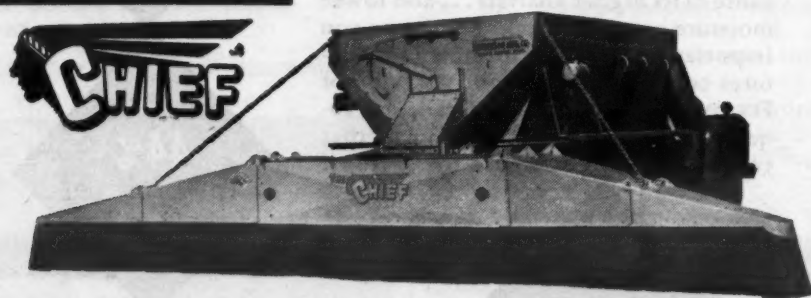
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These are but a few of the features that make the HENDERSON CHIEF tops of the field — in the field. A trial will convince you. For additional information or a demonstration simply address a card or letter to

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DEPT. 1, CEDAR RAPIDS, IOWA

IN FIELD, GREENHOUSE TESTS

Antibiotics Show Promise of Bean, Tomato Disease Control

New reports on experimental work with antibiotics for control of plant disease have been published in the August issue of Plant Disease Reporter, publication of the U.S. Department of Agriculture. Field tests with Agri-mycin, developed by Chas. Pfizer & Co., Inc., resulted in control of bacterial spot in tomatoes, as well as in bigger yields and fruit sizes. An antibiotic mixture developed by Merck & Co. shows promise in greenhouse experiments of economically-significant control of common bacterial blight of beans, a disease that runs up an annual estimated toll of more than \$6 million.

Yield, Fruit Size Of Tomatoes Increased

HOMESTEAD, FLA.—Dr. Robert A. Conover of the University of Florida has reported yield increases of 10,000 lb. an acre—and an average increase of 12% in fruit size—in tomatoes sprayed with a mixture of terramycin and streptomycin to control the disease, bacterial spot.

In an article prepared for the August issue of Plant Disease Reporter, official publication of the U.S. Department of Agriculture, the Florida scientist reported that tomato plots treated with the antibiotic mixture, called Agri-mycin, produced 554 60-lb. crates of fruit per acre compared with 44 for untreated plots. Agri-mycin was developed by Chas. Pfizer & Co., Inc., Brooklyn.

Dr. Conover, plant pathologist at the Sub-Tropical Experiment Station at Homestead, said that using Agri-mycin at a concentration of 200 parts of antibiotic per million parts water proved effective as a preventive in controlling outbreaks of bacterial spot under commercial field conditions.

In this experiment the antibiotic spray was applied seven times during the rainy season, Dr. Conover said. Only 8.5% of the treated plants contracted the disease, while 25.4% of the plants receiving no antibiotic treatment were afflicted with bacterial spot. In addition, the average fruit size of the mature-green tomatoes increased from 5.04 oz. to 5.63 oz.

Dr. Conover pointed out that control of bacterial spot was actually somewhat better in the treated plants than his statistics indicated, since the first fruit was picked while the vines were still wet with dew, the moisture causing an increase in infected fruit with each succeeding harvest.

Regarding cost, Dr. Conover said it was obvious that "the increase in yield, reduction in infected fruit, and increased fruit size would have made this investment a profitable one for the winter grower of mature-green tomatoes."

In a second experiment, Dr. Conover tested Agri-mycin both on plants already infected with bacterial spot and on disease-free transplants. He reported that the antibiotic combination reduced disease incidence by 72% in the infected plants, and by 85% in the healthy transplants.

Although fruit size was not affected by the treatment in the second experiment, Dr. Conover said, a reduction of 40% in cracked or scarred fruit was noted in tomatoes taken from treated plants. This reduction alone was "more than sufficient" to pay the cost of materials used, he said.

Cotton Mechanization Conference Planned

COLLEGE STATION, TEXAS — Relation of insect control in cotton to over-all mechanization progress will be discussed at the ninth annual Beltwide Cotton Mechanization Conference here Sept. 7-9. The conference is sponsored by the National Cotton Council in cooperation with the Texas A&M College System, U.S. Department of Agriculture, Farm Equipment Institute and Cotton Belt land grant colleges.

Mixture Promises Bean Blight Control

RAHWAY, N.J.—Dr. Reed A. Gray, plant physiologist at Merck & Co., has described in the current issue of Plant Disease Reporter successful experiments with a new spray mixture combining streptomycin and glycerin for control of common bacterial blight in beans.

The spray mixture was developed in the Chemical Division research laboratories of Merck. Streptomycin, marketed by Merck under the trade name Agristrep, has been used successfully in recent years for control of bacterial spot of tomatoes and peppers, halo blight of beans, fire blight of apples and pears, walnut blight and other plant diseases.

According to Dr. Gray, the new mixture gives promise of controlling common bacterial blight in beans and there are indications that it may lead the way to better control of diseases in other forms of plant life.

Dr. Gray points out that some experts have thought that there is a need for an agent which, when combined with streptomycin, will prevent the antibiotic from being washed off the leaves by dew or rain.

In the greenhouse experiments at Merck, Dr. Gray found that the addition of glycerin to streptomycin sprays caused an increase in the effectiveness of the antibiotic against the common bacterial blight of Pinto beans. Greater streptomycin concentration and less blight were found in plants on which the combination of glycerin and streptomycin had been sprayed.

This improvement is believed to be due to the capacity of glycerin to aid the absorption of streptomycin by leaves and other plant tissues. Although investigation is continuing to amplify these findings, it is felt that the addition of glycerin to the spray may serve to maintain moisture on the leaves, thus facilitating the absorption of the antibiotic into the plant.

If field tests substantiate the value of the glycerin-antibiotic mixture against common blight, the saving in bean crop loss alone will be economically significant, say Merck researchers.

According to Merck researchers the success of this development indicates the possibility that a spray of this combination type may be devised to provide increased effectiveness against other disease-causing organisms which infect leaves, flowers and stems of various fruits and vegetables.

Victor 25-Year Club

CHICAGO—Active membership in the 25-Year Club of Victor Chemical Works reached a new high of 19 recently as 14 new members from the company's plant and main office in Chicago were honored at the fifth annual watch award banquet. Presentation of gold, engraved watches to the new members was made by Rothe Weigel, president. Mr. Weigel was introduced by Dr. Howard Adler, vice president in charge of research who served as toastmaster. Victor, a prime producer of phosphates, formates, and oxalates for more than 40 years of operation.

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Better Selling

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

Iowa Dealer Pushes Fertilizer Sales with Spreading Service, Program for Fall Application

The Gilbertville, Iowa, Milling Co. finds that there is a considerable demand for bulk spreading service among farmers. The firm owns one big spreader and has an enlarged picture of it posted on the wall of the office, with red crepe paper all around it.

When farmers come into this office, they can't forget that the Gilbertville Milling Co. has a spreading service, for they see that big picture and are reminded of it.

"We have been increasing our fall fertilizer business by doing advertising, talking up the idea among farmers and offering a discount if the fertilizer is bought in the fall.

"This discount amounts to about 5%, but if a farmer doesn't pay his bill in 30 days we add one per cent per month until it is paid. In this way, we get our money in quite quickly, and the farmer who delays payment must pay more."

So says Joe Delagardelle, owner, who is helped in his big fertilizer and feed business by his sons Gerald, Lloyd and Roy. The business was founded about 1910 by Joe's father, who was also in the lumber business.

This firm hauls its fertilizer from a plant in nearby Waterloo and this by-passes any extensive bulk storage at Gilbertville. However, Mr. Delagardelle has just completed a large concrete block and steel warehouse, measuring 50 by 66 ft., which is used to store bagged fertilizer and feed. It also contains seed cleaning and treating equipment and has room for the firm's five trucks.

Seed cleaning and treating, mostly oats and soybeans, is getting to be quite a business, reports Mr. Delagardelle. Farmers want good seed, properly treated on their well fertilized land, thus the quality seed and fertilizer programs work in very well together.

Mr. Delagardelle has several acres of land on which his mill and separate storage buildings stand, and he has graveled a large portion of the parking yard. During the spring fertilizer and feed rush there are many trucks parked in the yard, he reports.

This firm charges 40¢ per acre for spreading fertilizer, but the charge jumps to 50¢ if the order is less than 2 tons, or if the rate of fertilizer application is less than 200 lb. per acre. For fall fertilizer farmers order up to 8 tons, reports this dealer.

The company does extensive newspaper advertising during the fall and spring fertilizer seasons. It also carries a fine ad in the Waterloo telephone directory stressing its fertilizer, feed and farm chemicals stock, and highlighting bulk spreading. However, farmers in this area all know of this firm which has been in business a long time and many of them come here for most of their farm needs.

A fulltime salesman-service man is employed who handles poultry and livestock service troubles and also sells feeds and fertilizers. This man is able, too, to contact many farmers in the region regularly and has an

opportunity to book many fertilizer orders.

Several times a year, this dealer holds fertilizer and feed educational meetings in his town and these events help him to get farmers to realize the importance of fertilizing their fields properly for the most profitable crop yields.

Mr. Delagardelle reports that he sells quite a bit of chemicals for control of corn borers and weeds. The firm has a custom sprayer service, because there are many farmers in the area who do not yet have their own sprayers. Charges for spraying vary depending on crops and materials used.

"We really feel that we have an all around service for the farmer with fertilizer, farm chemicals and feeds," states Mr. Delagardelle. "We know our patrons' credit pretty well and we have a very low rate of loss on delinquent accounts. When farmers know we can serve them well on one type of product they are willing to buy others from us."

Kansas Grain Group Urges Sanitation

HUTCHINSON, KANSAS — Food grain sanitation cards are being made available to members of the Kansas Grain & Feed Dealers Assn. for distribution to growers.

The cards are for posting on the premises of the wheat producing farmers, or for handing or mailing to the producers.

Suggestions on the card urge the producers to "keep your grain marketable as food grain" and that all food grain should be kept absolutely free from all types of filth and weevils.

MORE GRAIN

URBANA, ILL.—Southern Illinois is rapidly becoming a grain-producing area. Corn production has doubled since the 1930's and now averages about 80 million bu. a year. A soybean industry of about 30 million bu. a year has developed completely since then, and wheat after a wartime decline is back up to the 15 million bu. produced each year in the 1930's.

IN BURLEY TOBACCO AREA

Ohio Dealer Uses Alert Merchandising

Fertilizers and other farm chemicals are merchandised vigorously at the Ripley (Ohio) Community Locker Plant, just across the river from the famous Kentucky burley tobacco region. Much burley tobacco is raised in this area, and J. J. and Clem F. Germann, brothers, who own the locker plant, are alert to every opportunity to sell fertilizer.

The average tobacco grower in this region raises up to 5,000 lb. tobacco annually. They also grow additional crops and raise some livestock.

The Germanns have quite a business enterprise in this area. In addition to a locker plant, containing 324



SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Some pointers on making a profit in the farm supply retailing field were expressed recently by James H. Burrell, head of a St. Louis agricultural and industrial consulting firm, before a group of retailers. Mr. Burrell's years of experience in his present work and previous widespread business experience make his comments worthy of attention by anyone in the retailing field.

There are a few basic principles to be understood for anyone in the retail business, Mr. Burrell states, and these include: The right product or merchandise to sell; ethical and effective business methods must be used, and the necessity of a good sales staff, since personnel

are the most valuable asset of any retail firm. Further, a business must know its costs and work on a budget program to be successful, he adds.

On credit and credit control Mr. Burrell had this to say:

Analyze your credit terms and credit control program. Anything that can be done to:

1. Sell more for cash;
2. Sell more on short-term than long, and
3. Collect accounts faster on the average,

will enable the dealer to get more from what he has in receivables.

An analysis of the merchandise account will reveal that gross sales can be increased in direct proportion to the number of times merchandise inventory turnover rate is increased.

Increase Turnover

The merchandise turnover increase will depend on how many lines the dealer carries, his closeness to sources of supply, and how good a job he does on inventory control. Anything that can be done along these four lines will enable the dealer to get more from what he has in merchandise.

1. Eliminate duplicate lines.
2. Eliminate items that do not "go" in his market.
3. Plan buying to fit more closely with expected sales volume.
4. Watch stocks and push those items not moving as they should.

Concerning "housekeeping," Mr. Burrell says:

Good merchandising begins with

(Continued on page 14)

(Continued on page 11)



By RAYMOND ROSSON

County Agent, Washington County, Tenn.

It is tragic to read from year to year that agriculture has more accidental work deaths than any other industry in the U.S. Last year more than 14,000 farm residents were killed and 1,200,000 injured in farm accidents.

A large portion of our farms today are highly mechanized. Skill and experience are necessary to the safe operation of most of our farm machinery. Carelessness must be guarded against. Fatigue, resulting from long hours of hard work during rush seasons on the farm, is the primary cause of many accidents. Livestock and falls count for many more.

It was said of old, that eternal vigilance is the price of liberty. It is likewise the price of safety. Let us strive with constant watchfulness,

lockers, they have a food store and a hardware and toy department right in the same building. Naturally, the farmers who have lockers here are those to whom the Germanns can sell fertilizer.

According to Clem F. Germann, a ton of tobacco contains an average of 55 lb. phosphorus, 55 lb. nitrogen and 50 lb. potassium. This is the approximate equivalent of 1,000 lb. of a 6-8-6 fertilizer. His store sells a lot of 5-10-10 fertilizer for tobacco.

"We used to sell as many as 50,000 bags of fertilizer a year," reports

this retailer, "but we are getting a lot of competition from some manufacturers who sell in this area, largely to livestock truckers. These truckers take cattle to market and often haul back fertilizer. That makes it very tough for the regular fertilizer retailer."

Seasonally, this store also displays insecticides, weed control items, sprayers, etc., and sells quite a bit of this merchandise to farmers and gardeners in the area. Of course, the heavy traffic which the locker, food and hardware store get regularly—a large portion from rural areas—

(Continued on page 11)



"Oh, won't it be nice to have Mr. McGillicuddy back tomorrow?" said Tillie Mason at the close of a business day. "I can hardly believe that it's 18 days since he went to the hospital for an appendectomy. And of course that virus infection kept him there a lot longer than what all of us figured."

"Huh," Oscar laid his pencil on his neat desk, "it was probably some of that Mulligan stew he ordered made on Irish Day that got him sick. I could taste onion for a week. My mouth burned every time I drank hot coffee."

Tillie laughed. "Oh, it was fun that day, wasn't it, with all those gay Irish tunes on the tape recorder, and the jigging? And such Irish stories that were floating around."

"A lot of wind, all right," Oscar commented. "I had all the office windows open. And even the Irish farmers that owed us money had the nerve to come and eat stew and wish us prosperity."

"Well," said Tillie a little anxiously. "It's all over now, and Mr. McGillicuddy's coming back. I hope—I hope you and he won't argue as much as ever, Mr. Schoenfeld. I believe my ulcer is just about gone these past few weeks. I'd—I'd hate to get it back."

"It certainly has been peaceful around here," Oscar admitted. "Just shows what can be done when folks concentrate on cutting down wastes and costs and don't spend foolishly."

"You've done fine in Pat's absence," declared Tillie, "but I'm afraid he won't like how you've been putting salesmen off all the time, not giving them any orders."

"Well, why not?" Oscar challenged. "Pat's been buying too much merchandise for years. It was stuck in every crook and cranny around here. I've converted a lot of that dead stock into cash. And we want cash."

When Pat came down the next morning, after that 18 day absence, he looked a little pale, but his smile was happy and infectious. He found a jar of gladiolas on his desk, a present from Tillie. Oscar even shook his hand and smiled at the same time, and said he hoped he'd get better very fast.

"It certainly is great to be back," Pat said, "although they had some pretty nurses in the hospital, and I heard a lot of stories from the patients when we got together for chats. Guess I'll just walk around a little and look over the store and the warehouse. I'm lonesome for the business. I want to get acquainted with it again."

"There's a nice long list of delinquent accounts to get acquainted with again," Oscar couldn't help saying, then added, "after you're fully recovered, of course."

Pat laughed. "Same old Oscar," he said. "Needling me on my first day back. But money is important. I found that when I tried to scrape enough to pay hospital bills and feed me flock."

In about twenty minutes Pat was back in the office. His face was very pale. He said down in his chair at

the desk opposite Oscar, and his breath was coming fast.

"Oscar," he finally managed to gasp. "What in the world happened around here when I was gone?"

"What happened?" echoed the perplexed Oscar. "Why—nothing hap-

pened. We got along just wonderfully. Why?"

"The store? The warehouse? They're empty as a morgue. Only a little stock left."

Oscar chuckled triumphantly. "Oh, that! Sure, I just cleaned house."

Haven't bought a thing since you left. Figured we might as well clean up on a lot of stock that we'd been stuck with for a long time. You bought too much, Pat. Now, our money is over in the bank, instead of on our shelves. It's better to have it in the bank, don't you think so?"

"No," said Pat firmly. "How can you win and please customers without adequate stock? The more goods you have that they can buy, the more they will buy, if your prices are right and you promote your merchandise. Oscar, you can't sell if you haven't got anything to sell."

"Oh, we just got like this this past week," Oscar admitted grandly. "Now we can start buying a little again. But let's not stock up like before."

Pat licked his dry lips. "Oscar, how many farmers did you have to send

away because they wanted to go to the bank to call for it?"

"But if you don't have stock just to call for it,"

"Huh, then soon as we get the point, really got ought to be"

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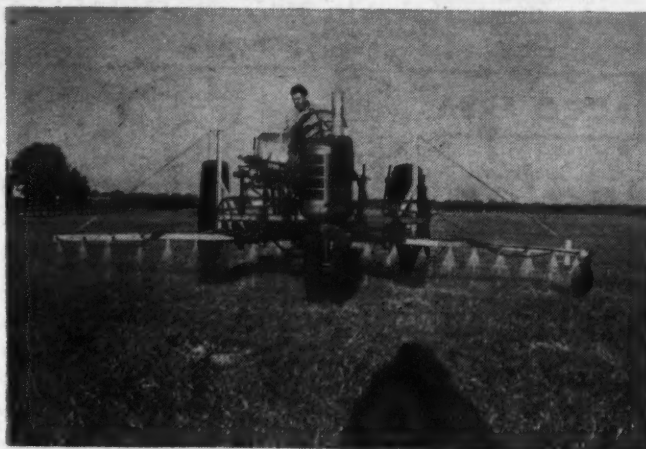


FERTILIZER SALES SPURT

in September like spring — when modern farming practices get together with modern ARCADIAN Fertilizers. These versatile new products and the powerful advertising campaigns that back them up help to build up even faster the growing fall market for fertilizer. In the season from late summer to late fall, plow-down and top-dressing for sod, cover crops and stubble are being added to traditional seeding and top-dressing applications for pasture and winter grain. These bigger fall markets stretch your sales season on many ARCADIAN products.



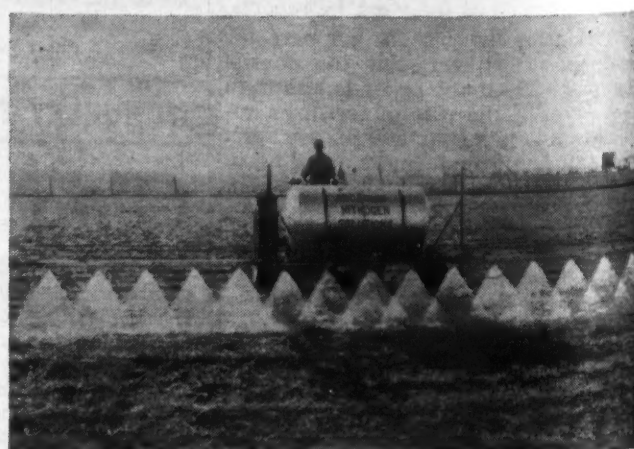
Farmers get months more green feed nowadays by top-dressing pastures with extra nitrogen in fall. Labor-saving ARCADIAN UREA 45, the 45% dry nitrogen fertilizer, makes timely pasture fertilization faster and easier. Leach-resistant UREA 45 also makes fall top-dressing easier to sell to your farm customers.



Spraying on nitrogen to perk up pastures is a simple, low-cost, speedy practice with ARCADIAN URAN* and FERAN* Nitrogen Fertilizer Solutions. These profit-builders for your farm customers are profit and fall-volume builders for you. The spray or dribble-tube application rigs make extra sales volume.



Winter grains today require a balanced starter fertilizer to boost yields to profitable levels. Grain planting makes an ideal market for ARCADIAN 12-12-12, the concentrated, granular fertilizer rich in nitrogen, phosphorus and potash. ARCADIAN 12-12-12 also provides some sulphur, calcium and minor elements.



Speedy nitrogen top-dressing for winter grains, after the crop has made a good start, is easy with spray or dribble application of ARCADIAN URAN or FERAN Nitrogen Solutions. Farmers get the job done in the slack labor period of late fall, and you extend your fertilizer sales season.

It takes nitro- gen-rich or- Farmers, li- ARCADIAN plowing dow- early spring

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☐ UREA 45%
☐ 12-12-12 Granu-
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☐ Non-p- URA
☐ Low-p- NITR

away because we were 'out' of what they wanted?"

"Oh, not too many, I guess. I told them to go elsewhere to buy. I don't believe in investing in a whole lot of stock just to be able to sell one or two of the packages to farmers who call for it."

"But if a merchant has too many out in his stock, customers get disgusted and go elsewhere," Pat persisted. "First thing you know they are buying all their fertilizer and insecticides somewhere else."

"Huh, they'll come back, just as soon as we order a little more stock," Oscar pointed out. "Meanwhile, we've really got our stock down where it ought to be."

"Down where it ought to be!" Pat echoed irritably. "It's down so far we're almost out of business. We'll feel the effects of this slump in stock,

Oscar, in the next six weeks. I know it. We'll have fewer customers. No wonder salesmen have been sending me so many get well cards."

"Huh, they don't care about you," Oscar snapped. "All they care about is selling you stuff."

"They're our friends and helpers," Pat came back. "We want them to sell us their reliable products, so we can make a profit. We can't get along without those salesmen. Why they've given me a lot of good promotion ideas which have made money for us over the years. Oscar, I'm going to tell you something: you may be a financial wizard keeping books and taking discounts, but you don't know anything about getting and keeping customers."

"And you don't know anything

about cutting down on waste and reducing costs and collecting money," Oscar said peevishly. "Did you ever think of that?"

"Yes, I have, Oscar," Pat said sadly. "Each of us has some talent the other hasn't got. That's why we have to stick together, isn't it? Now, if you don't mind, I'm going home to rest up another day and do some thinking."

"Go ahead," Oscar said. "I've been thinking ever since the first day we went into business. And worrying, too, for that matter."

DOUBLING SORGHUM YIELDS

STILLWATER, OKLA.—Fertilizer tests in eastern Oklahoma on sorghum indicate yields can be doubled in many cases with proper fertilizer use. Soils low in organic matter need extra nitrogen when the sorghum plants are from 4 to 8 inches tall.

OHIO DEALER

(Continued from page 8)

means that fertilizer and chemical items get a great deal of display attention at various seasons of the year.

"We've got a lot of farm trade," reports Mr. Germann, "and we let them know the variety of merchandise we have for them."

In November each year, the tobacco buyers in the area begin to purchase burley tobacco, and the merchants take advantage of this project to stage a large annual Tobacco Festival. At such an affair all the stores usually put on merchandise specials of various kinds, and there is also entertainment of many types, including a parade.

The local newspaper issues a special tobacco edition which has a wide county coverage. Editorial and ad copy urges burley tobacco farmers to come and sell their crops at Ripley. The edition is filled with valuable information for farmers on raising tobacco crops, fertilization, etc., and merchants say that many farmers keep this edition for reference.

Because the growing of tobacco requires a lot of fertilizer, the Germanns do not hesitate to tell their tobacco grower customers that it pays to purchase and use enough fertilizer.

Farmers also get this same story broadcast at them by state agricultural college meetings and gatherings and many of them do follow the fertilizer recommendations of experts.

The Ripley Community Locker Plant also sells some fertilizer to gardeners in the area, as well as home owners for use on lawns. Weed chemicals move quite well, report the Germanns, with more people becoming conscious of what can be done to control weeds through chemical means.

OVER THE COUNTER

(Continued from page 9)

the exterior of the store; painted front, clean windows and good identification. Windows are the face of any store. Customers are evidently impressed by them for it is claimed that 50% of the sales of a store are made through window displays. Probably this is true, because people learn more through sight than through all of the other senses combined. Good window displays produce high returns because they make people stop, look and buy.

A clean store front, window displays and a clean store all contribute to that clean look which customers like and associate with business efficiency and success.

The National Cash Register Co. reports the findings of many studies to determine what attracts people, as follows:

Eye 87%, ear 7%, nose 3.5%, hand 1.5%, tongue 1%.

Dress up the "eye" appeal of the store. It costs little and returns so much.

Recently, I read the following statement which I believe could be applied to farm supply business with amazing results. "Curiously enough, the most fertile source of new ideas and better methods is not from competitors, but is to be found in what others in different lines of business are doing."

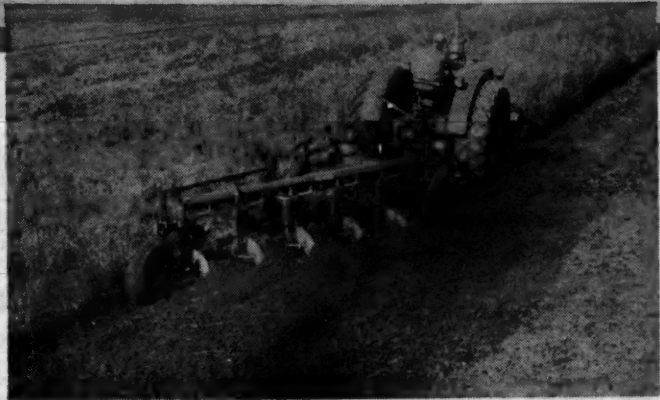
LOOSE SMUT DISEASE

LAFAYETTE, IND.—Loose smut disease of wheat is occurring in considerable quantity in Indiana this season.

Fall Fertilizer Programs



It takes nitrogen to rot cornstalks into valuable, nitrogen-rich organic matter to feed next spring's crop. Farmers, like these watching a demonstration of ARCADIAN URAN Nitrogen Solution application, are plowing down more and more nitrogen in late fall and early spring. It pays to sell this growing market.



Fall plow-down of nitrogen with sod and stubble on adapted soils is being recommended by more and more experiment stations and practical farmers. ARCADIAN UREA 45, the concentrated, leach-resistant, pelleted, easy-flowing nitrogen fertilizer, is ideal for capturing these "off-season" sales.

ARCADIAN stretches your profit season...

over more months of the year — with new products and new equipment to expand traditional fertilizer markets. You don't have to be in a winter cash crop area to expand ARCADIAN sales in formerly slow fertilizer months. Get full details now on the profitable ARCADIAN line.

MAIL THIS COUPON NOW!

- ☐ UREA 45 Fertilizer
45% Nitrogen Pellets
- ☐ 12-12-12 Fertilizer
Granular
- ☐ American Nitrate of Soda
Improved Granular
- ☐ A-N-L® Nitrogen Fertilizer
Pelleted
- NITROGEN SOLUTIONS**
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URAN® and FERAN®
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Please provide me full information on the products I have checked at the left.

☐ Please have an ARCADIAN salesman call on me.

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Covers in detail: soil chemicals, important soil elements such as nitrogen, phosphorus, calcium; yield prospects of crop plants, moisture control, soil management; mechanical operations; soil conservation; organic matter maintenance. New facts, accurate figures, 66 illustrations, 420 pages **\$6.00**

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A symposium—published jointly by the American Society of Agronomy and the National Fertilizer Association.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents, and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color **\$4.50**

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Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful **\$10.00**

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Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

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CHEMICAL BUSINESS HANDBOOK *Dr. John H. Perry*

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication **\$17.00**

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FARM SERVICE DATA

Extension Station Reports

Farmers can't starve alfalfa and expect it to survive and produce high yields, says P. E. Johnson, University of Illinois agronomist. Alfalfa crop failures in the past have been blamed on the moon, on wet feet, on hard winters and numerous other causes, he says.

But actually, most failures are due to a shortage of balanced fertility in the soil. This is particularly true of the clay pan soils of southern Illinois, Mr. Johnson points out.

Given a fair chance, alfalfa will produce high yields even in dry years when the right combination of lime, phosphate and potash is added to the soil, the Illinois agronomist reports.

Mr. Johnson says that a three-ton alfalfa crop will remove from the soil 140 lb. nitrogen, 35 lb. phosphate and 135 lb. potash.

Giving the soil a well balanced supply of nutrients is particularly important, he says. Mixed hay yields were a third to two times higher on soils treated with crop residues, lime, phosphate and potash than where a single nutrient was used. The tests were made on long time soil experiment fields conducted by the University of Illinois.

★ Curtis Klint, Norman County, Minn. soil conservation agent, recently dug up and photographed some barley roots on a test area he set up near Ada, Minn.

Here's what he found: barley that had not been fertilized was about 10 inches tall and had a small, shallow root system.

But barley which this spring had been fed 75 lb. ammonium nitrate per acre was about 14 inches tall and had 50% more roots.

And on barley ground which had received 160 lb. 4-24-12 applied with a drill in addition to the 75 lb. ammonium nitrate, the barley was about 18 inches tall and had twice as big a root system as barley in unfertilized areas.

★ Good soil management is helping many farmers grow 100-bu. corn crops on land once thought too poor for corn.

In some cases the soil's nutrient reserves had been mined out by over-cropping or most of the topsoil lost through erosion. In others, the fertility level was too low in the beginning for profitable yields.

Now, says G. E. Smith, University of Missouri agronomist, such soils can produce high corn yields and high profits per acre by the use of adequate amounts of balanced fertilizer and other good management practices.

★ A "square meal" of plant nutrients can mean the difference between a good legume seeding or a poor one, Michigan State College agronomists report. E. D. Longnecker, extension soils specialist, points out that one of the most profitable spots to use fertilizer is with legume-grass seedings.

These crops give the soil its punch, he says. And when a combination seeding is made the fertilizer benefits both the legume-grass seeding and the companion crop of oats or barley.

Mr. Longnecker suggests adding

up to 300 lb. or more of a nitrogen-phosphate-potash fertilizer per acre. On sandy loam or on light, coarse sandy soil, he suggests using 400 to 500 lb. per acre.

Iowa soils men recommend that legume seeds be planted no deeper than one-half to one inch. In Iowa tests, 63% of the alfalfa seeds and

40% of the red clover seeds produced seedlings when the legumes were planted one-half inch deep.

At a one-inch depth, 48% of the alfalfa and 25% of the red clover came through. But at two inches deep, only one per cent of each legume made a seedling.

★ A Purdue University animal husbandman reports that good pasture can return anywhere from \$75 to \$125 per acre through the sale of lambs and wool.

Russell Brower, of the Purdue staff, says that high yielding, succulent, well-fertilized legume pasture can cut feeding costs and boost profits in any well-managed sheep flock program. Fat suckling lambs on good pasture are about the only meat animals that

can be sold at the top of the market with little or no grain feeding, he points out.

★ Pontiac and Red Pontiac potatoes can be made a desirable ruddy red by spraying the vines with from ¾ to one pound of 2,4-D amine per acre in 40 to 80 gal. water, according to University of Minnesota horticulturists.

Robert E. Nylund, associate professor of horticulture, says that for best results the 2,4-D should be sprayed on when the plants are in full bloom and the tubers beneath are one to two inches in diameter. Only the lower half of the plants should be sprayed, using one nozzle on each side of the row.

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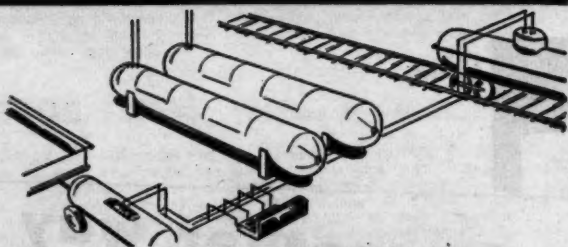
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FIELD NOTES

(Continued from page 9)

prudence and care to reduce to a minimum the number of accidents on our farms and in our farm homes.

Farm accidents cost approximately \$40,000,000 in hospital, doctors' and nurses' expenses alone, and many millions more for other expenses connected with such accidents.

Dealers, make "safety first" one of your 1955 farm slogans.

The President has proclaimed July 24-30 as National Farm Safety Week. He has requested all organizations and leaders interested in farm life to join in the continuing drive to reduce needless deaths and injuries to farm people.

The success of this campaign will depend upon the activities initiated and the guidance and support provided for them. The county and home demonstration agents have been asked to do all in their power to help in this campaign. Dealers should be on the alert and do likewise.

Unless life is sacred to us, the lives of others will become unimportant to us. Do be careful and tell your customers to be careful.

Michigan Specialist
Stresses Cleaning of
Spraying Equipment

EAST LANSING, MICH.—The importance of cleaning chemical spray equipment when switching from weed killing to insect control is stressed by a Michigan State College weed control specialist.

B. H. Grigsby tells farmers, "you'll save time, money and effort if you do a thorough job of cleaning that equipment before switching from one type of spray to another."

To clean the sprayer, Mr. Grigsby recommends running the sprayer with the nozzles closed for five minutes. Leave the solution in the sprayer overnight if possible. Then pump out all of the washing solution into a tile drain to avoid contaminating the soil. Wash all of the hard-to-get-at parts with a stiff brush. Last thing to do is to rinse the sprayer with clean water.

Lawn and Turf Institute
Formed in Kansas City

KANSAS CITY—The Better Lawn and Turf Institute, a national non-profit organization, has been formed here. The group plans close cooperation with state experimental stations, existing seed organizations and related branches of the turf grass industry.

Alfalfa Treatment

DIXON SPRINGS, ILL.—Soil treatment has more than doubled the life of alfalfa stands at the Dixon Springs Experiment Station of the University of Illinois. L. E. Gard, agricultural researcher at the station in Pope County, reports that tests over the past four years show that light applications of rock phosphate plus 300 lb. 20% superphosphate, 200 lb. 60% potash and 30 lb. borax to the acre each year are the most desirable treatment.

Firm Sold

PLYMOUTH, WIS.—Sulpha Form Co., manufacturer of pesticides and other products, has been sold by Karl Goetze to Robert Johnson.

FAST EATER

Hungry corn plants can take from the soil as much as 85 per cent of their entire summer's ration of plant food in the six weeks between the knee high and tasseling stage.

Excellent Weed
Control Shown at
Minnesota Field Day

WASECA, MINN.—A field of Redwood flax, sprayed when six inches high and now almost entirely free of weeds, was one of several in weed control tests visited at the University of Minnesota Southern School and Experiment Station annual field day here July 12.

John Thompson, station agronomist, says that the flax was sprayed with a mixture of five pounds of TCA to kill foxtail and four ounces of MCP to check mustard, lamb quarters and other broad-leaf weeds.

He says results are "excellent," although stray thistle patches had to be sprayed with a second "shot" while in the bud stage. This kept them from blossoming but did not kill them.

Right now, spraying this field seems a good investment. Last year it was in soybeans and was full of giant foxtail; it had only surface cultivation and spraying held down foxtail remarkably well, Mr. Thompson believes.

In the station's corn fields, Mr. Thompson reports that spraying has probably taken the place of on-cultivation in weed control efforts. However, their chemical weed control has not, for some reason, been as effective as last year when some chemical treated corn plots—never cultivated or hoed—yielded nearly 100 bu. per acre.

Soybeans planted with a grain drill in six-inch rows at 120 lb. seed per acre did very well with pre-emergence chemical spraying. Some weed killers did a good job on both broad leaf and grass weeds—plots have remained clean with no cultivation.

Mr. Thompson pointed out that chemical weed control in beans may be even more important than in corn.

Topdressing Alfalfa
Pays Off With Extra
Three Tons of Hay

Topdressing alfalfa can pay off with an extra three tons of hay per acre over a three-year period, says C. J. Chapman, University of Wisconsin soils specialist.

He points to results from one Wisconsin farm on which hay fields topdressed with 550 lb. 0-20-20B ("B" for boron) were compared with similar fields, unfertilized since 1953. After the first cutting this year, the topdressed fields had yielded 6,200 lb. more total hay than unfertilized fields during the three-year period.

For most hay fields in Wisconsin Mr. Chapman recommends 300-500 lb. 0-10-30 or 0-10-30B per acre, depending on whether there is a boron deficiency. Where first crop hay has been cut just recently, the topdressing can be done immediately, before the second growth gets a good start.

Where second growth is well along, Chapman advises farmers to wait and do the topdressing this fall before the ground freezes, or plan to topdress next spring. Topdressing is just as important on pastures, Mr. Chapman says. Plan to fertilize late this fall or next spring with 400-600 lb. 10-10-10 per acre, he advises farmers.

HIGHEST PROFIT CROP

ST. PAUL—Highest profit per acre among seven crops—that's the not surprising record corn has in a group of Minnesota farmers' well-kept records evaluated by University of Minnesota agricultural economists. Corn made farmers an average \$43.33 per acre. Soybeans were next with \$18.33 per acre profit. In value produced per acre, corn was two-and-a-half times more valuable than oats and barley.

What's Been Happening?

This column, a review of news reported in CROPLIFE in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Formation of Phillips Pacific Chemical Co., which will erect an ammonia fertilizer plant in southeastern Washington, was announced by Phillips Petroleum Co. and Pacific Northwest Pipeline Corp., which will jointly own the newly-formed firm. . . . Shell Chemical Co. announced plans to build a new urea plant at Ventura, Cal.

A harmonious meeting on the grain sanitation campaign, conducted by the U.S. Department of Agriculture, appeared to point toward a smoother path for pesticide sales in the clean grain drive. . . . Pakistan was awarded a \$1,046,452 grant by International Cooperation Administration for equipment for a fertilizer factory.

The sixth annual Pacific Northwest Fertilizer Conference at Boise, Idaho, June 28-30, featured speakers from USDA, agricultural colleges, and custom operators from the western area. Reports were heard on fertility studies. . . . U.S. Tariff Commission reported that production of all pesticides and other organic chemicals in 1954 totaled 419 million pounds, an increase of 18% over the 356 million pounds reported for 1953.

Program committee members for the September meeting of the National Agricultural Chemicals Assn. (Spring Lake, N.J., Sept. 7-9) were named. M. R. Budd, Hercules Powder Co., Wilmington, Del., is chairman. . . . Members of the Association of Southern Feed & Fertilizer Control Officials met at the Jung Hotel, New Orleans, June 22-24. Frank E. Boyd, Virginia-Carolina Chemical Corp. pointed out the advantages of having fewer grades of fertilizers to avoid confusion and additional work. "Improvements in the number of grades must come through the cooperative effort of research, industry and education," he said.

A. P. Gates was named assistant to C. Cecil Arledge, vice president of Virginia-Carolina Chemical Corp. at Richmond and R. Andrew Jenkins was made manager of V-C's Baltimore sales office. . . . Dr. Norman A. Shepard has retired from his post as chemical director of American Cyanamid Co.

The National Agricultural Chemicals Assn. announced the appointment of Donald L. Miller as editor of the association's news service. He succeeds Scott Runkle who resigned recently.

Thunderbird Chemicals, Inc., announced plans for construction of a \$13 million anhydrous ammonia plant near Kyrene, Ariz. President of the new firm is Fred Shanaman, also president of Pennsylvania Salt Mfg. Co., of Washington. A plant site of 122½ acres has been procured.

The Pacific Branch of ESA was told that only a small number of petitions for tolerances required under the Miller amendment, have been received by the Food and Drug Administration. Attendance at the meeting, over 400, broke previous records. . . . A new insecticide plant at San Antonio de Belen, Costa Rica, began production of various formulations to be marketed in Central America. C. J. Fredrickson was named chief operating executive of plant.

A series of revised index numbers of prices of fertilizer materials for the years 1910 to 1954 was published by the University of Maryland Agricultural Experiment Station's department of agricultural economics and marketing. The changes were made to "provide a more realistic picture of the comparative prices of fertilizer materials (some of which) no longer represent a significant quantity relative to the total of all fertilizer materials," according to Paul R. Poffenberger, University of Maryland.

The U.S. Department of Agriculture issued its national bulletin outlining disbursement of some \$250 million in the 1956 agricultural conservation program. There are no major changes in the program. . . . The Department of Health, Education & Welfare outlined the conditions under which it will extend the effective date for the new Miller Law to apply to pesticides on a product-by-product basis.

Fertilizer consumption during 1954 totaled 20,508,000 tons, for a new record, according to the National Plant Food Institute. A NPFI survey shows, however, that sales for the 1954-55 fiscal year may be down as much as 4%.

About 900 attended the preliminary meeting of the National Plant Food Institute, being formed by the consolidation of the National Fertilizer Assn. and the American Plant Food Council. . . . W. E. Shelburne was named president of Armour Fertilizer Works. . . . New president of Pennsylvania Salt Manufacturing Co. is William P. Drake, 42, youngest president in Pennsylvania's 105-year history.

Prospects are that the U.S. may produce over four million tons of synthetic nitrogen annually by Jan. 1, 1957, it was confirmed by U.S. Department of Agriculture officials. . . . Production of pesticides in the U.S. for the first three months of 1955 showed increases ranging up to 100%. . . . The high value of controlling cotton insects with chemical insecticides has been clearly demonstrated throughout 16 years of experiments at Waco, Texas, the USDA reports.

A survey taken by Virginia's state chemist, Rodney C. Berry, indicated that more states are permitting the sale and distribution of fertilizer-pesticide mixtures than were so numbered in a similar survey taken in 1954. Six more states reported that mixtures were being sold within their borders than were noted in last year's questionnaire.

Gypsy moth and budworm spraying projects were being undertaken in Maine and New Mexico. More than a half million acres of timber was set for treatment and about that many pounds of DDT were to be used. . . . USDA announced promising results from two new systemic insecticides for control of cotton pests. . . . John E. Sanford, president of Armour Fertilizer Co., Atlanta, Ga., retired after a career of 45 years in the fertilizer business.

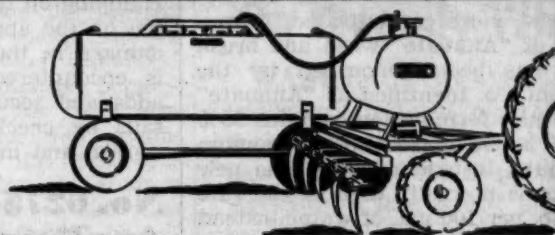
Davison Chemical Co., Division of W. R. Grace Co., announced that a new professorship has been established at the Johns Hopkins University, Baltimore, to be known as "The Grace Chair of Chemistry." The position will be filled by Dr. Paul H. Emmett of the Mellon Institute of Industrial Research, Pittsburgh.

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More and more dealers are relying on Beaird equipment for the extra storage facilities needed to meet today's doubled production and demand. At the plant or on the farm, Beaird safety-built storage and handling equipment is your sure way to bigger profits in anhydrous ammonia. *Before you buy, ask your Beaird representative about a planned storage and field equipment program designed to fit your requirements.*



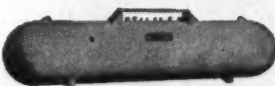
FOR APPLICATION

Beaird applicator tanks — 110, 150, and 200-gallon sizes. Available unfitted or fitted with highest-quality fittings. Gleaming white "Weather-Weld" enamel finish.



FIELD STORAGE

Beaird packaged storage station available for do-it-yourself installation with all necessary pipe and fittings, pump and safety controls. Shown: 6,000-gallon; other sizes from 2,000 to 30,000 gallons.



MOBILE FIELD SUPPLY

Beaird truck and trailer tanks, 500 and 1,000-gallon sizes, equipped with internal baffles to meet all state regulations. Dual fill valve couplings cut filling time in half. Long lasting gloss white "Weather-Weld" enamel finish.

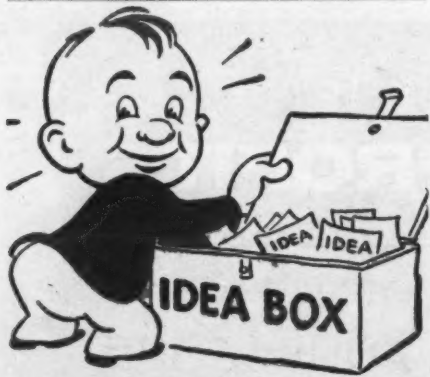
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What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6277—Weed Killer

A new, more concentrated, formulation of "Ammate" weed and brush killer has been announced by the Du Pont Co. Identified as "Ammate" X, the new formulation contains 95% of the active ingredient, ammonium sulfamate, instead of 80%. The new product is normally used at the rate of 60 lb. per 100 gal. of water instead of 75 lb. Containers for the new formulation are 60-lb. bags and 40-lb. fiber drums, corresponding to the previous 75-lb. and 50-lb. containers. It is recommended as a foliage spray for control of woody plants, and as a stump treatment to prevent resprouting. Check No. 6277 on the coupon and mail it to secure more complete information.

No. 6281—Applicator

The John Blue Co. announces that its new rigid shank applicator is designed for use in tough soils where deflection of applicator blades is a problem. The announcement states that "four types are available for use with tool bars of almost every size and description. Exclusive truss frame design gives maximum strength with minimum weight. The shanks are constructed of alloy, heat treated steel. . . ." Another feature is claimed to be the clamp design which

maintains the applicator in the correct running position. "Heavy duty bolts provide adequate strength for clamping on the tool bar and a shear pin on the applicator blade prevents damage in the event an obstruction is encountered," the announcement adds and secure more complete details by checking No. 6281 on the coupon and mailing it.

No. 6275—Insect Applicator

A new, 4-row, granular, insecticide applicator has been announced by the E. S. Gandrud Co., Inc. Called the Gandy Hi-or-Lo Spreaderette, the new applicator is designed to provide effective corn borer control over a



period of several weeks with one application. Adjustable to heights of 3 to 6 ft., the unit drops granular DDT into the corn whorl where leaves attach to stalk.

Company officials claim that the

machine is capable of handling all granular insecticides including aldrin, dieldrin, chlordane, heptachlor, DDT and toxaphene, and permits effective control of cloverleaf weevils, chinch bugs, grasshoppers, army worms, sweet clover weevils, wire worms and spittle bugs, as well as corn borers. Check No. 6275 on the coupon, clip and mail it to Croplife to secure more details.

No. 6280—Slide Film

A new slide film in sound and color titled, "Weed Control in Peanuts With Crag Herbicide-1," is now available.

This seven minute film is provided without charge by Crag Agricultural Chemicals, Carbide & Carbon Chemicals Co., a Division of Union Carbide and Carbon Corp. Check No. 6280 on the coupon and mail it to secure the film.

No. 6284—Booklet

The Granulite Co. has published a booklet entitled, "Granulite Ag-Slag." The product, Ag-Slag, is described by the booklet as a liming material containing the minor elements: manganese, sulphur, boron, copper, iron and zinc. Facts about the product, the properties of calcium silicate slag, trace element composition and comments by users are included in the booklet. Dr. George N. Hoffer, consulting agronomist, is author of the foreword. Secure the booklet by checking No. 6284 on the coupon and dropping it in the mail.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6274—Soil Test

Iowa State College's film production unit has produced a 22-minute film entitled "Soil Test." Produced under supervision of the college's agronomy department, the film is available for rent or purchase for \$190 a copy. For rental information a regular film library or the Visual Instruction Service, Iowa State College, Ames, may be contacted. Preview prints are available for those interested in purchasing the film. The only charge for the preview film is for insurance and return postage. For purchase information write: Print Sales Manager, Film Production Unit, Alice Norton House, Iowa State College, Ames.

No. 5200—Weighing System

A technical reference, offered by Richardson Scale Co., describes and illustrates a weighing and handling

system which utilizes a line of battery hoppers suspended from an elevated monorail. Under the remote control of one operator, the hoppers are automatically tare weighed, filled with multiple ingredients, net weighed and conveyed to a delivery point for discharge. The reference outlines the complete sequence of operation for the weighing, indicating and delivery cycles. One section, discussing control features, covers such things as pilot light indicators, weigh selector dial and the system's servo mechanism. Information on the automatic recording of tare, gross and net weights is also included. To secure the reference check No. 5200 on the coupon and mail it to this publication.

No. 6166—Spray Rig Filter

The Central Mine Supply Co. has designed and is manufacturing a new spray rig filter. Company spokesmen said that it is "designed for ease



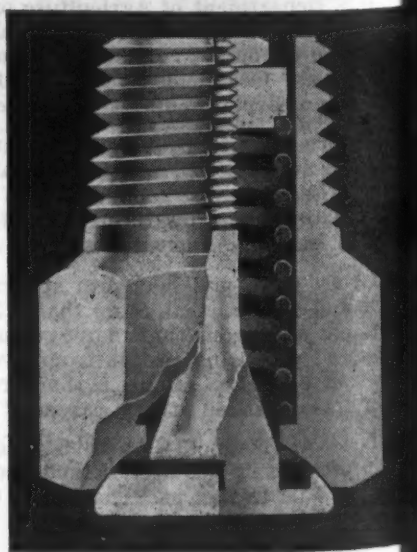
cleaning, with a sediment bowl in its base . . . and uses an easy-to-replace sock type filter element." Prospective users and dealers may have more complete information without charge. Check No. 6166 on the coupon and mail it to Croplife.

No. 6289—Feeders

A 12-page technical bulletin entitled, "Continuous Proportioning Equipment for the Fertilizer Industry," has been published by the Omega Machine Co., division of B-I Industries, Inc. The bulletin was prepared by Andrew A. Melnychuk, project engineer. Sections are devoted to phosphoric acid production, superphosphate, triple superphosphate, continuous compounding of fertilizer mixtures, proportioning of coating agent to hygroscopic materials and summary. Chemical feeding and proportioning problems are welcomed by the firm's engineering and laboratory staff, the bulletin states. To secure the bulletin check No. 6289 on the coupon and drop it in the mail.

No. 6165—Check, Relief Valves

Details of how check and relief valves are used in Brea Chemical Corporation's distribution tanks for



Send me information on the items marked:

- | | |
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| <input type="checkbox"/> No. 5200—Weighing System | <input type="checkbox"/> No. 6273—Level Gauge |
| <input type="checkbox"/> No. 5225—Bagging Scale | <input type="checkbox"/> No. 6274—Soil Film |
| <input type="checkbox"/> No. 6163—Dust Filter | <input type="checkbox"/> No. 6275—Insect Applicator |
| <input type="checkbox"/> No. 6165—Valves | <input type="checkbox"/> No. 6277—Weed Killer |
| <input type="checkbox"/> No. 6166—Spray Rig Filter | <input type="checkbox"/> No. 6280—Slide Film |
| <input type="checkbox"/> No. 6271—Pyrenone Spray | <input type="checkbox"/> No. 6281—Applicator |
| <input type="checkbox"/> No. 6272—Hose Pump | <input type="checkbox"/> No. 6284—Booklet |
| <input type="checkbox"/> No. 6289—Feeders | |

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handling nitrogen solutions have been announced. The valves are trade named Circle Seal Precision valves by James-Pond-Clark. The Circle Seal announcement states that "Nitrogen or low pressure gas is used to 'pad' or pressurize the tanks to prevent boiling off of ammonia vapor and permit application under pressure. The relief valves protect the tanks from over pressure caused by increased vapor pressure where the tanks are in the sun. . . . The check valve protects the nitrogen or low pressure gas regulator from attack from the ammonia vapor." A check valve with a light spring is used as a vacuum breaker to permit flow out of the tank as the liquid is used and the pressure drops. To secure more complete details check No. 6165 on the coupon and mail it to Croplife.

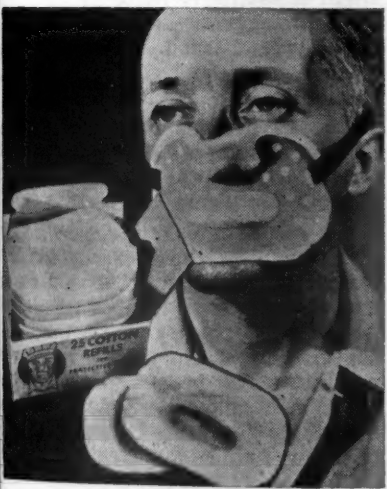
No. 6271—Pyrenone 606 Spray

A newly developed insecticide just announced by Niagara Chemical Division of Food Machinery and Chemical Corp. is Pyrenone 606 spray. This new spray is claimed to be non-poisonous and non-injurious to man, livestock and foodstuffs.

The product is an oil-free emulsifiable concentrate containing 60% piperonyl butoxide and 6% pyrethrum. When diluted with water, it can be used for the following: A liquid grain protectant, a fruit fly spray and as an industrial and livestock spray. It is recommended for food packers and canners where fruit flies and other insects are troublesome. Secure more details by checking No. 6271 on the coupon and dropping it in the mail.

No. 6163—Mask, Dust Filter

A light protective mask which weighs less than ½ oz. has been announced by the General Scientific Equipment Co. Made of soft rolled



aluminum, it is said to be so pliable that it fits any shape face. It is recommended for protection against ordinary non-toxic dusts and spray hazards and may be worn with goggles. No metal touches the skin. Filter discoloration, caused by dust, is indicated in the picture. For more complete details check No. 6163 on the coupon and mail it to this publication.

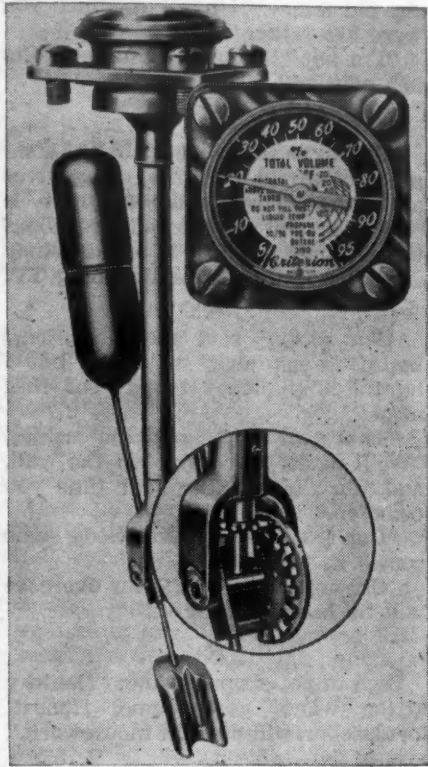
No. 5225—Automatic Bagging Scale

Richardson Scale Co.'s E-50 automatic bagging scale is described and illustrated in the company's new 6-page bulletin No. 3749A. The scale was designed for high-speed bagging with consistent weighing accuracy, according to the manufacturer. It has a normal capacity range of 5 lb. to 25 lb. or 25 lb. to 50 lb. Both open-mouth paper or textile bags can be weighed and filled with the scale, the company says. The bulletin includes three suggested feeding arrangements for granular, powdered and pellet-size materials. Specifications and optional features are outlined in the bulletin and accessories

as feeders, bagholders, sewing conveyors, sewing pedestals and packers are described. For a copy check No. 5225 on the coupon and drop it in the mail.

No. 6273—Liquid Level Gauge

A new magnetic liquid level gauge designed for use in anhydrous ammonia or LP gas storage, mobile and applicator tanks has been introduced by the Rochester Manufacturing Co.



Called the Criterion, it features a new headplate design, tested to withstand 1,200 lb./sq. in. pressure and new shrouded gear assembly which transmits float arm movement to the dial, according to the manufacturer. For more details check No. 6273 on the coupon and drop it in the mail.

No. 6272—Hose Pump

New features of the Liberty liquid fertilizer hose pump introduced by the Liberty Manufacturing Co. have been announced. The Krause Plow Corp. has acquired exclusive manufacturing and sales rights to this application device. Production of the hose pump is licensed by the University of Tennessee Research Corp., whose engineers designed and patented it. Improvements in the pump have also been made by United States Department of Agriculture engineers at Beltsville, Md., who have been working with it for the past 18 months. The hose pump is a metering device which is said to handle all types of fertilizer solutions, and is claimed to be accurate and free from stoppage troubles. Secure additional information by checking No. 6272 on the coupon and mailing it.

No. 6290—Phosphorus Pentasulfide

The addition of phosphorus pentasulfide to the list of phosphorus derivatives available from Monsanto Chemical Company's inorganic chemicals division has been announced. The company's distilled phosphorus pentasulfide, made with pure electric furnace phosphorus, is being marketed as a greenish yellow granular powder. Typical analysis is 27.9% phosphorus, 72.0% sulfur, and a melting point of about 280° C., the firm reports. The P₂S₅ also can be made available in solid form. Powdered material is packed in 150-lb. and 325-lb. drums. Secure more details by checking No. 6290 on the coupon and mailing it to Croplife.

CROP DISEASES

WASHINGTON—Crops are menaced by some 30,000 known diseases, the U.S. Department of Agriculture says.

Hammond Moves To Transfer Bag Business to Hudson

WELLSBURG, W. VA.—M. J. Davis, president of Hammond Bag & Paper Co., announced this week that the directors of the company have approved a proposal for the transfer of the company's paper bag manufacturing business to Hudson Pulp & Paper Corp. in exchange for stock of that company.

The proposed exchange under which Hammond shareholders will receive 2.35 shares of the class A common stock of Hudson for each Hammond share now held will be presented for approval to the Hammond shareholders at a special meeting to be held July 29.

The Hammond paper board mill, located in Wellsburg, is, however, not included in the exchange. It will be taken over by a new corporation to be organized under a new name, by Hammond shareholders.

Hudson will continue the present operation of the bag manufacturing business, with the same Hammond executive, sales and employee personnel. The Wellsburg, Pine Bluff, Arkansas, and Charlotte, N.C., plants of Hammond fit into the marketing and distribution pattern of Hudson and it is expected that the activities of each of these plants will be expanded as time goes on. Sales operations still will be under the Hammond name.

Hudson Pulp & Paper Corp. owns large woodlands in Maine and Florida and has three plants in Florida, Maine and Vermont. At its large kraft mill at Palatka, Fla., kraft paper, especially fabricated for use in multi-wall paper shipping sacks such as those now made in the Hammond plants, is produced, and converting facilities for such sacks are also operated.

Mr. Davis explained that in recent years the trend toward integration has pointed up the desirability of a closer relationship between raw materials and finished product. The present transaction, Mr. Davis stated, linking as it does the manufacture of multiwall paper bags to essential raw materials, back through the paper and pulp, to the forests themselves, offers distinct advantages to the Hammond shareholders, customers and employees.

POISONOUS RANGE PLANTS

COLLEGE STATION, TEXAS—Bitterweed, milkweeds, loco weeds and the groundsels are among range plants most common and poisonous to livestock in Texas. These plants are among 69 listed as poisonous grazing to livestock in Texas Range Plants Poisonous to Livestock, a new joint publication of the Texas Agricultural Experiment Station and Extension Service.

New North Carolina Inspection Rules Published

RALEIGH, N.C. — The North Carolina Department of Agriculture, has published a new issue of inspection service rules, regulations, definitions and standards, which includes amendments adopted this spring.

One new amendment reads that "bags of only the following sizes shall be used in the sale of commercial fertilizer: 200 lb., 167 lb., 125 lb., 100 lb., 50 lb. and the size of the sellers choice when the amount is less than 50 lb."

The publication also includes the approved official grade list for 1955-56. According to John L. Reitzel, assistant commissioner of agriculture, the list is the same as that for 1954-55, with the exception of 16-6-2, which has been deleted.

USDA Cracks Down On Weevily Wheat

WASHINGTON — Field and laboratory tests of piperonyl butoxide and pyrethrin combinations have convinced the Department of Agriculture that wheat in storage can be protected against insects. That puts a premium on clean wheat as far as top market prices are concerned.

And because these powerful insecticidal agents are virtually non-toxic, they have found acceptance with government regulatory agencies concerned with food.

One of the most effective combinations of piperonyl butoxide and pyrethrins currently available to the grain trade is "Pyrenone* Wheat Protectant" . . . and "Pyrenone Grain Protectant" for corn, oats, barley, rye and other small grains. Pyrenone comes in both spray and powder form.

A single application of Pyrenone Wheat Protectant, applied according to directions, will protect wheat in storage all season long.

*Reg. U.S. Pat. Off., F.M.C.

Pyrenone

Wheat and Grain Protectants



TRADE MARK

FAIRFIELD CHEMICAL DIVISION
Food Machinery and Chemical Corp.
420 Lexington Ave., N.Y. 17, N.Y.



SOILS and FERTILIZERS

Fourth Edition

By FIRMAN E. BEAR, Research Specialist, New Jersey Agricultural Experiment Station.



1953. 420 Pages \$6.00

In plain language, this new edition tells how recent modern advances in soil technology affect plant growth and annual yield . . . and how the effective use of basic methods can increase the productivity of farm lands. New facts, accurate figures, and 66 pointed illustrations show the relation between crops and soils.

Covers in detail: soil chemicals . . . important soil elements such as nitrogen, phosphorus, calcium . . . yield prospects of crop plants . . . moisture control . . . soil management . . . mechanical operations . . . soil conservation . . . organic matter maintenance.

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WORLD REPORT

By **GEORGE E. SWARBRECK**
Croplife Canadian and Overseas Editor

Almost without exception every crop report from the spring wheat and durum growing areas of North America mentions the menace of rust. In recent years heavy damage has been sustained, monetary losses have been heavy and farmers are in despair. They turn away from the vulnerable crops, a situation which has led to the current serious shortage of durum.

The problem, it had been hoped, could be met by the breeding of resistant strains but it is a slow, laborious process and ultimately the disease catches up with the new, resistant varieties.

The problem is seen as one for the agricultural chemists. What are they doing about it? "Plenty" is the word from the research laboratories. But progress is slow. So far, the only chemical proving consistently successful is sulfur but the high cost is against its universal use. The search for an effective deterrent is going on in government laboratories, and in the research establishments of private chemical firms.

Dr. T. Johnson, a Canadian plant pathologist, says that crops may be dusted or sprayed with a fungicide to give rust resistance—but the work is soon nullified by wind and rain. The growing plants must be sprayed three or four times to insure effective prevention.

What is needed, Dr. Johnson says, is a fungicide which, with one spraying, will change the physiology of the plant, making it rust resistant without harming it.

Numerous fungicides have been tried already but in nearly every case they are too costly or injurious to the plants. However, the work goes on and the research men feel confident that they will come up with an effective answer one day.

Spanish Expansion

One of Spain's largest fertilizer producers is to expand its capacity. Union Espanola de Explosivos, Seville, plans to raise superphosphate production by 120,000 tons a year when new installations are brought into use.

Additionally, 35,000 tons sulfuric acid will be added. The value of the new machinery required is estimated at more than \$85 million and some of it will have to be imported, though Spanish manufacturers are expected to provide the greater part.

New Canadian Plant

Dow Chemical of Canada, Ltd., is planning the construction of an ethanolamine plant at Sarnia, Ont. Estimated to cost \$1 million the new facility will serve a number of Canadian industries, including the agricultural chemical industry.

Raw materials for the new plant will be readily available from Dow's other Sarnia operations. Engineering work is proceeding and equipment is on order. Currently, most of Canada's ethanolamine requirements come from the U.S.

Insecticide Supply

The Israeli firm of Makteshim Insecticides and Chemicals of Beersheba reports that it is slowly reaching its objective of supplying all Israel's needs for pest destroyers. Effective from the beginning of July, the factory began to supply all the copper oxide required for the destruction of fungi on farms. The plant is also producing a new weed killer and general insecticide. It also covers the whole of the domestic requirement for DDT, officials add.

Green Aphids

The infestation of green aphids in Manitoba is assuming more serious

proportions. (Croplife July 11, page 1). H. E. Wood, an official of the province's Department of Agriculture, reports that the aphids have now spread from the southern area to the important crop growing areas of the north and central regions. He adds that the spread was not unexpected, since the more northerly crops are later and hence more succulent and attractive to the insect.

Mr. Wood said that considerable damage has been reported, particularly on farms where no precautions have been taken.

There has been a run on supplies of malathion and all available Canadian supplies have been used up. However, more are being brought in from the U.S.

The outbreak is the most serious in Manitoba since 1949 when crops on 100,000 acres were destroyed.

Protection Service

Officials of the Canadian government's plant protection service, whose duty it is to inspect all agricultural products imported into Canada, report that a recent shipment of peanuts into Montreal carried a medium infestation of six species of stored products insects.

Fumigation of the 6,500 tons involved was ordered at the expense of the owners. This involved treatment with methyl bromide by pest control operators under the supervision of the staff of the protection division.

Grants to Kansas State College Announced

MANHATTAN, KANSAS—Receipt of more than \$30,000 to support entomological research at Kansas State College was announced here recently by Herbert Knutson, head of the entomology department.

Dr. C. C. Roan got \$7,250 from the army to investigate action of insecticides on house flies and \$8,300 from the Atomic Energy Commission for insecticide investigations using radio isotopes.

Prof. Donald A. Wilbur got \$5,850 from Fairfield Chemical Division, Food Machinery & Chemical Corp., Douglas Chemical Co., for investigations on how to protect stored grain from insect infestation.

Dr. Knutson got \$4,900 from the army to study long-range effects of insecticides upon insects.

Dr. Fred A. Lawson got \$2,450 from the U.S. Public Health Service to study the effects of insects' internal glands upon their growth.

C. C. Burkhardt got \$1,500 from the Shell Chemical Corp. and the Velsicol Corp. to study control of agricultural insects with insecticides.

Wyoming Field Day

LARAMIE, WYO.—The Powell Experimental Substation will hold its biennial field day Aug. 2, according to George Bridgmon, supervisor of substations with the College of Agriculture of the University of Wyoming.

Gloomicides

A staid gentleman, honorary judge at a horse show, was upset by the dress of some of the girls.

"Just look at that young person with the poodle cut, the cigarette and the blue jeans," he decried to a bystander. "Is it a boy or a girl?"

"It's a girl. She's my daughter."

"Oh, forgive me, sir," apologized the old fellow. "I never dreamed you were her father."

"I'm not," snapped the other. "I'm her mother."

★

Although they are usually composed of stupid husbands, smug wives and ill-mannered children, there is one thing you have to admire about the families in the TV serials—they don't waste their time watching TV.

★

"I'm sorry," said the diner, who hoped to get away with it, "but I haven't any money to pay for that meal."

"That's all right," said the cashier. "We'll write your name on the wall, and you can pay the next time you come in."

"Don't do that. Everybody who comes in will see it."

"Oh, no, they won't. Your overcoat will be hanging over it."

★

Sign in pet shop window: "Healthy kitten wants good home. Honest, loyal, sober, will do light mousework."

★

Hypochondriac: A man who can't leave being well enough alone.

★

When it comes to tax reduction, never was so little waited for by so many for so long.

★

We wanted to have tomorrow patented because that is the best known labor saving device.

★

A bird in a butcher's hand weighs more.

★

A young bride of three months complained to her relatives about her husband's continued drinking habits.

"If you knew he drank, why did you marry him?" she was asked.

"I didn't know he drank," the girl replied, "until one night he came home sober."

★

A bright young man, striving to think of an original way to propose, finally asked his sweetheart, "Could you be persuaded to climb my family tree?"

★

Fortunately for us, says the optimist, we're on bad terms with Russia and China and don't have to support THEM.

★

Two acquaintances met outside a polling place during a recent election in the west and both started to talk about the list of candidates for the various offices up for election. Finally they came to several men who were listed as candidates for the office of mayor.

"Ben," remarked one voter, "I don't want to vote for any of these men. Why, I don't know a one of them."

"I'm in the same position, Bill," replied the other sadly. "I know them all."

★

Girls who go home with the milkman aren't necessarily the cream of the town.

★

Saleslady to customer: "Here's a hat that will never go out of style. Ten years from now it will look just as ridiculous as it does now."



Robert W. Berger

NEW SALES MANAGER—Robert W. Berger has been appointed general sales manager of the Ohio Farmers Grain & Supply Assn., Fostoria, Ohio, by S. E. Salisbury, general manager. He succeeds Thomas A. Lee who has been named public relations director for the association and its sister company, the Ohio Farmers Grain Corp. A graduate of Ohio State University, Mr. Berger has had marketing and sales management experience with a number of companies. Since 1952 he has been district sales supervisor for Chas. Pfizer & Co., Inc., in Memphis, Tenn.

Boron in Fertilizer Recommended for Black Spot Control

GENEVA, N.Y.—Black spot or dry rot in beets grown for processing is due to lack of boron in the soil and can be prevented by applying small amounts of boron in the form of fertilizer borate, says Prof. Charles B. Sayre, Cornell vegetable crops specialist at the Experiment Station at Geneva.

But so little is needed that it is difficult to apply it uniformly to a field unless it is mixed with commercial fertilizer.

"In severe cases of boron deficiency large parts of the beet turn black," explains Prof. Sayre. "In mild cases the trouble may not be discovered until the beets are cut. For that reason canning factory field men may cut into a few beets on higher, dried parts of a field where the trouble is not likely to occur. If an occasional beet is found damaged by boron deficiency, however, the entire lot may be discarded by the processor."

The trouble is especially likely to occur on alkaline soils or soils that have been limed recently, says the station scientist. Boron is less available to beets on such soils because the lime forms an insoluble compound with it.

"The amount of borax to apply per acre depends on the alkalinity of the soil," advises Prof. Sayre. "Soil with a pH above 7 should receive the equivalent of 50 lb. On slightly acid soils with a pH of 6 to 6.5 the equivalent of 20 to 30 lb. is called for. Not over 10 lb. fertilizer borate should be used on acid soils unless lime is first applied."

New Superintendent Named at Lawrence

LAWRENCE, KANSAS—Carl C. Chaffee has been named superintendent of the Cooperative Farm Chemicals Assn. nitrogen plant here. He succeeds James M. Wadsworth, under whom he had been assistant superintendent. Charles W. Lanning has been named production superintendent, a new position.

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Easier Application, Greater Efficiency

GRANULAR INSECTICIDES

Granular insecticides are becoming increasingly popular. Experimental work by research people over the past several years and recent large scale field applications have shown the granular insecticides to be very effective in control of a variety of insects and to have certain advantages over other forms of insecticides.

Granular insecticides are special formulations made up in the form of granules or free flowing particles of fairly uniform size, nearly free of dust. The most common mesh size of the particles is from 30 to 60 mesh. This means they are large enough to go through a 30 mesh screen but are held on the 60 mesh.

A figure commonly quoted on the number of particles in a pound of 30-60 mesh Attacloy granules is 13,500,000. An application of 5 lbs. of these granules per acre, spread uniformly, would give 10 particles on each square inch. Larger particles are being tested but so far the amount of field data accumulated is not sufficient to justify changing from the 30-60 mesh size particles. Larger particles, if they prove out, would have the advantage of settling faster in aerial application and further cutting down drift.

The granular base material used in formulating granular insecticides so far has Attacloy, bentonite clay, ground tobacco stems and vermiculite. In the formulation process the granular base material is sprayed with a solution of the insecticide to give a finished product of from 1% to 10% by weight of the active insecticide.

Advantages of granular formulations are numerous. They include the benefit of less drift during application than with dusts or sprays and control of mosquito larvae, the granules fall through the foliage onto the water surface. In treating feed crops or turf and ornamentals, the granules are particularly well suited since they fall through the foliage onto the soil surface thereby lessening the hazard of foliage residues.

Also many of the harmful insects are active on the soil surface and with the use of granules, can be controlled here in a relatively short time. Properly formulated granules will release the insecticide which will be carried by rains or sprinkling water into the soil to control subterranean insect pests such as grubs.

Another advantage of granules is that in many applications a larger "pay load" can be carried than with spray. For instance, for soil insect control on corn ground, 5 lbs. 20% Aldrin granules will be used in Iowa and Nebraska for corn rootworm control, and from 7½ to 10 lb. an acre in other states where other insects occur. A water spray mixture requires 2 gal. or approximately 16 lb. an acre.

Equipment for applying granular insecticides will need to give a uniform broadcast application of as little as 2 lb. an acre for treating water areas for mosquito control and up to 30 lb. or even 50 lb. an acre for special applications as with the Japanese beetle programs in Illinois and Michigan where 10% Dieldrin granules were applied at 30 lb. an acre.

The 50 lb. an acre application has been used in the white fringed beetle eradication program where it is desired to "grub proof" an area by applying from 2½ to 5 lb. actual Dieldrin an acre contained in 25 to 50 lb. 10% Dieldrin granules. Most field applications would be expected to fall in the 5 to 10 lb. an acre range. However, the 5 lb. rate has been effective

EDITOR'S NOTE

The author of this article, H. H. Dodge, is with the Shell Chemical Corporation. The paper was presented at the Fourth Annual Indiana-Ohio Agricultural Aviation Conference at Purdue University, Lafayette, Ind.

in control of soil insects (mostly corn rootworm) in commercial applications over the past three years in Iowa and Nebraska. To date, there is considerable background on the use of these granules mixed with dry fertilizers and applied to corn ground, applying with field fertilizer spreaders before planting.

Airplane application, however, would be expected to be just as successful as ground equipment has been so long as the application is uniform. Other equipment being developed to apply granular insecticides includes seeder attachments for field fertilizer spreaders and a row attachment for a corn planter which would meter granules into the seed furrow. For small areas some are using lawn fertilizer spreaders or cyclone seeders for applying granules. Also some formulators have put up granulated insecticides for their small package lines in shaker-top cans.

Among the various insecticides being tried in granular formulations are most of the chlorinated hydrocarbons, such as Aldrin, Chlordane, DDT, Dieldrin, Endrin, Heptachlor, and Toxaphene. The concentration of the finished granules of each can be varied according to the local recommendations for control of the insects, and the equipment used.

The concentration is limited to some extent, however, by the granular base used and the solvency characteristics of the insecticide. Recently, some testing has begun with the soil fumigants used as nematocides, such as Shell DD, Ethylene Dibromide and experimental material OS1897 formulated as granules and applied as soil applications (broadcast and disked in). Previously, the commercial application of such soil fumigants has been only by injection with a chisel-type ground applicator.

Considering the insects controlled with applications of granular insecticides, the largest group with which most workers in the mid-west have been concerned is the soil insects.

Most of these have been successfully controlled either by experimental or commercial applications of granular insecticides to the soil.

A list of soil insects controlled by proper formulations and application of granular insecticides would include: pale western cutworms, army cutworms, imported fire ants, wireworms, false wireworms, white grubs, European chafer grubs, northern masked chafer grubs, rice water weevil, clover root borer, clover root curculio, cranberry root grub, cranberry root weevil, tuber flea beetle larvae, cabbage maggots, onion maggots, carrot rust fly, sugar beet maggots, various cutworms, ants, springtails, cucumber beetle larvae, grape colaspis, seed-corn maggot, seed-corn beetle, flea beetle larvae, mole crickets, Brachyrhinus weevils, vegetable weevil larvae, white-fringed beetle larvae, Asiatic beetle larvae, Japanese beetle larvae, and green June beetle larvae.

Besides soil insects, certain surface feeders and foliage pests are being controlled experimentally or commercially with granular applications of insecticides. With some of these pests, control is obtained because at



AT PACIFIC NORTHWEST CONFERENCE—Shown above are scenes from the recent Pacific Northwest Fertilizer Conference, held at Boise. In the photos, all from left to right, are:

First row—Left photo, James Dacres, the Dacres Co., Pomeroy, Wash., and Sherman McGregor, Harley Jacquot and Cliff Rollings, both from McGregor Land & Livestock Co., Hooper, Wash.; right photo, Leon Jackson, Leon Jackson & Associates, Portland, secretary of the Pacific Northwest Plant Food Assn., and Sid Martin, Yakima Valley Spray Co., Yakima, Wash., association president.

Second row—Left photo, Dick Kube, Balfour, Guthrie & Co., Spokane, Leck Rowden, Bemis Bro. Bag Co., Vancouver, Wash., and William Lucke, Bemis Bro. Bag Co., Seattle; right photo, Kent Remington and Kenneth Remington, J. J. Remington Co., Parker, Idaho.

Third row—Left photo, Marion N. Crady, the Du Pont Co., San Francisco, and Gene Bates, Van Waters & Rogers, Portland; right photo, Tom Cushing, Wilson & Geo. Meyer & Co., San Francisco, John Foster and Marlowe Wood, Wilson & Geo. Meyer & Co., Salt Lake City.

Fourth row—Left photo, L. E. Warner, Pendleton (Ore.) Grain Growers, Inc., Harold Rud, J. R. Simplot Co., Salem, Ore., and Warren Marshall, Columbia Agricultural Service, Walla Walla, Wash.; right photo, three representatives of U.S. Gypsum Co., Dean Graham, Seattle, Howard Reddish, Denver, and James C. Rinehart, Chicago.

Fifth row—Left photo, Clarence Paulson, Northwest Chemical Co., Pasco, Wash., and Emmett Reed, Shell Chemical Co., Pasco, Wash.; right photo, Jim Russell, Wilson & Geo. Meyer & Co., Portland, and Steve Carlson, Wilson & Geo. Meyer & Co., Seattle.

For stories about the conference see page 3 of the July 18 issue of Crophlife and page 1 of the July 11 issue.

least one stage of the insect develops in the soil.

Surface and foliage pests controlled include: corn flea beetle, lawn chinch bugs, spittlebugs, onion thrips, sweet clover weevils, earwigs, sod webworms or lawn moths, various cutworms, armyworms, sowbugs, slugs and snails, and also European corn borer.

In the case of European corn borer it appears the granules fall into the whorls and leaf axils where the small

borers attempt to gain entry into the corn stalk. In the export field, the banana rust thrips are being controlled by the application of Dieldrin granules, with a million pounds of granules having been applied so far.

In public health insect control, work with granular insecticides for control of mosquitoes is well known. Other insects in the public health category which have been controlled with granular insecticides are Hippelates eye gnats and sand fly larvae.

Threat of Boll Weevil Build-Up Increases In Mid-South Fields

MEMPHIS — Mid-South farmers have laid by their crops to await the harvest after one of the best planting seasons in a number of years, but may have some trouble ahead from the boll weevils.

Extension officials in Arkansas, Mississippi, Missouri and Tennessee indicate in their weekly crop reports that while crops are in good condition, the recent weeks of damp weather have given the boll weevil an opportunity to get in some good attacks on cotton.

With continued rains in most of Mississippi, danger of heavy buildups of weevils is increasing, according to the Mississippi Agricultural Extension Service.

A. G. Bennett, extension entomologist, said extremely large numbers of weevils are moving from "local hot spots" into adjacent fields. This has resulted in greatly increased numbers of punctured squares in fields that a week earlier were free from weevil damage.

Crop prospects in the Delta are the best in years for cotton, corn, soybeans and other crops, reports L. H. Moseley of Stoneville, extension district agent for Northwest Mississippi. Elsewhere in the state, crop conditions range from good to excellent, the specialist reports.

K. H. Buckley, extension gardening specialist, reports rains are helping home gardens stay in production longer than normal and that quality of produce is excellent.

Crops in Southeast Missouri continue to improve with only scattered showers. Some poison has been used for boll weevils and grasshoppers, but the situation is not serious at the moment.

The Agricultural Extension Service said the Arkansas cotton crop generally was clean, but that some, though not serious, infestation of boll weevils was being noted in central and southern counties.

Cotton was fruiting well and fields were in a good state of cultivation.

The moisture picture over the state was spotty. A few Southwest Arkansas counties were beginning to need rain. Many rice fields have been flooded for the second time, with plants responding well to nitrogen fertilizer which farmers have applied, the Extension Service reported.

With few exceptions, soybeans were reported making "good progress."

The recent hot weather helped cotton growth but the Extension Service noted it has reduced milk production and was beginning to burn pastures.

Judd Brooks, West Tennessee District Extension agent at Jackson, reported hot weather in most parts of the district helped the cotton crop, although some acreage in the bottom lands has been damaged by heavy local rains.

"Corn looks good to excellent and much of the crop is tasseling. Some fields are small and late. Pastures and hay crops look better than they have in two years, but some rain is needed in several counties. Most counties in the district reported some rain last week. It was excessive in Madison County. Commercial truck crops are very good this year."

North Carolina Shipments

RALEIGH, N.C.—North Carolina fertilizer shipments during May totaled 216,217 tons, compared with 168,097 tons in May, 1954, according to the North Carolina Department of Agriculture. Shipments for the first 11 months of the fiscal year (July-May) total 1,757,969, compared with 1,743,340 tons during a corresponding period a year ago.

MONSANTO

(Continued from page 1)

cial producer of technical grade agricultural chemicals. Over the past 10 years, it has been a major manufacturer of pesticides such as DDT, parathion, 2,4-D and 2,4,5-T.

Until now, Monsanto has restricted its agricultural chemical efforts to the sale of active ingredients to formulators who, in turn, processed and packaged these materials for the farmer under a variety of brand names.

This will be the first time that herbicides and insecticides for farm use will carry the Monsanto label, although a sodium meta-bisulfite sludge preservative trade-marked Medo-Green has been marketed to farmers by another Monsanto division since 1953.

Charles H. Sommer, Monsanto vice president and general manager of its Organic Chemicals Division, said that "by bringing our company into a direct relation with the farmer through these products we obtain a quicker and surer grasp of farm problems that may be solved chemically. This will permit us to aim our product research and development efforts more accurately at those problems, and to give farmers quicker access to new products born of those efforts."

Agricultural chemical research is one of the two or three largest research projects being carried on by Monsanto, according to Mr. Sommer, with a 1955 budget six times the amount spent by the company on such work in 1951. He said the company's Creve Coeur, Mo., laboratories yearly screen at least 2,000 likely chemicals for pesticidal activity alone.

Three new pre-emergence herbicides recently announced by Monsanto have shown good results against grass pests in numerous tests on corn and other crops, Mr. Sommer said. He added that one or more of these new products may be available to farmers for the 1956 season.

Monsanto's marketing plan for its brand-name farm chemicals includes aggressive advertising of its line to farmers in the 15-state sales area, Mr. Sommer said, and an extensive use of educational methods such as demonstration teams to help the farmer learn to profit more from farming with chemicals.

The agricultural chemical formulations named to date for marketing under the Monsanto label are:

Weed killers—2,4-D amine, 2,4-D butyl ester, 2,4-D butyl ester concentrate, 2,4-D isopropyl ester, 2,4-D ester aerial weed killer, emulsifiable, 2,4-D ester aerial weed killer, non-emulsifiable, 2,4-D low volatile ester, MCP amine and Chloro IPC.

Brush killers—2,4,5-T butyl ester, 2,4,5-T low volatile ester, 2,4-D-2,4,5-T butyl ester and 2,4-D-2,4,5-T low volatile ester.

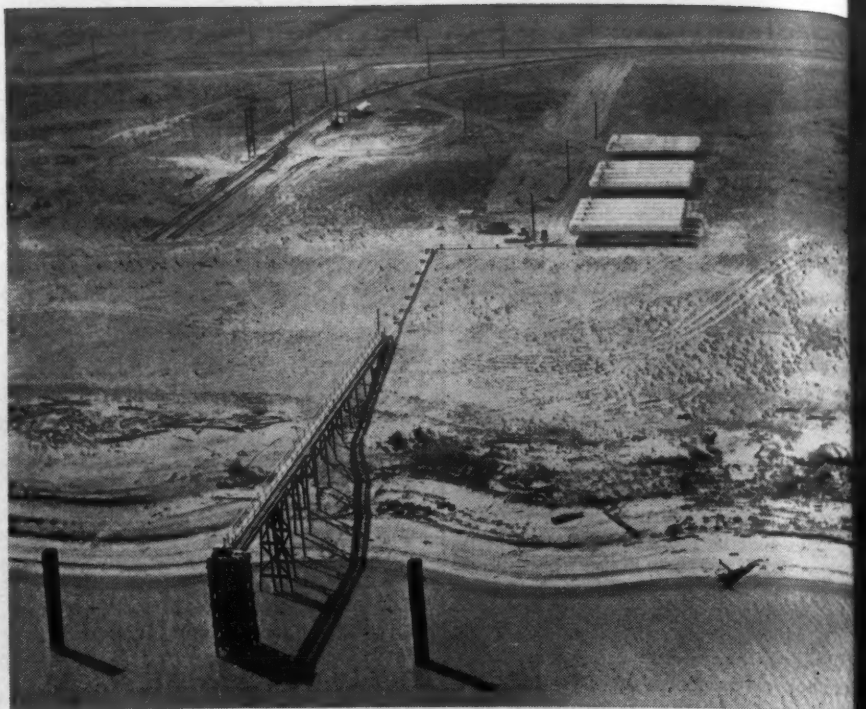
Insecticides—parathion emulsifiable concentrate, parathion wettable powder, DDT emulsifiable concentrate and DDT wettable powder.

Penta Crop Desiccant.

Liquid products will be marketed in one, five, 30 and 55-gal. metal containers. Dry materials will be packaged in 4-lb. cartons and 50-lb. bags.

PACEMAKERS SET FAST PACE

MADISON—Corn yields up to 220 bu. per acre were harvested by members of Wisconsin's Pacemaker Corn Club who followed a good soil-building and crop management program. The crop-boosting program included "pouring on" fertilizer where needed, using certified hybrid seed and in some cases, doubling the stalk population per acre. Altogether, 690 corn growers in 34 Wisconsin counties averaged 113 bu. corn per acre in the 1954 Pacemakers' program.



MID-SOUTH TERMINAL—Anhydrous ammonia terminals similar to this one at Memphis will be built by Mid-South Chemical Corp. at key points in the Midwest and South. From barges which moor to the Mississippi River dock in the foreground, ammonia is piped into the 30,000 gallon tanks at the right. Ammonia is also transported in tank cars, which use the rail siding at the left of the picture, and by transport trucks to distributing stations and farms.

MID-SOUTH CHEMICAL

(Continued from page 1)

ammonia plant by the oil companies at Lake Charles, La., where by-products of oil distillation will be converted to fertilizer.

Storage centers, such as that already erected by Mid-South here, will be built at strategic locations. They will be supplied with the ammonia by four barges, each of which will have a capacity of 900 tons.

The distributing centers will be equipped to transfer the ammonia from storage tanks to tank cars or

AGROCHEM

(Continued from page 1)

available to its shareholders at production and distribution cost.

The price to shareholder-farmers will be about 56% under the current market price here, according to Fred W. Lauer, Jr., Scottsdale, Agrochem vice president. Shareholders will buy ammonia on a per share basis or allow the company to sell it on the market, returning sale profits to the shareholders.

Agrochem has sold more than 25% of its 24,750 shares of common stock (\$100 par value) to some 50 Arizona farmers.

The firm plans initially to operate an 8,500-ton (25-ton-per-day) plant with 50-60 employees.

Plant construction is expected to start in February. Building and some equipment will be "oversized" to enable Agrochem to step up production to 60 tons per day. Agrochem also plans to produce ammonium sulphate and ammonium phosphate.

Distribution centers are being completed early so that the company can sell at cost to shareholders ammonia purchased by Agrochem at wholesale prices.

Besides Mr. Lauer, who is a mechanical engineer, other corporation officers and directors are Ervin C. Harney, Phoenix, president, who is a chemical engineer; Richard L. Wells, Los Angeles, secretary-treasurer, and an attorney, and Cecil H. Collette, Casa Grande; J. Clyde Wilson, Buckeye; Charles P. Gould, Tolleson, and Ross L. Sheely, Tolleson, directors.

Chandler, Ariz., is 20 miles south-east of Phoenix, in the heart of Arizona's principal agricultural region.

trucks. The company will own its own railroad tank cars.

Mid-South Chemical Corp. now operates in Alabama, Mississippi, Arkansas, Louisiana, Missouri, Kentucky and Tennessee. It marketed 20,000 tons of anhydrous in 1954 and presently has more than 85 distributing stations.

The company entered the anhydrous ammonia business in 1949. Last March it became the first distributor of anhydrous ammonia to utilize Mississippi River and intra-coastal waterway transportation. At that time, the firm installed a terminal on Presidents Island near Memphis, where it could take advantage of river-railroad-highway transportation facilities.

Mid-South headquarters are at 122 Riverside Blvd., Memphis.

In addition to Mr. Woolfolk, officers of the expanded Mid-South organization are J. D. Wooten of Memphis, vice president; A. P. Frame of New York, Cities Service Co., vice president; H. G. Osborn of Ponca City, Okla., Continental Oil Co., vice president; John C. Hogan of Memphis, secretary-treasurer, and B. M. Scofield of Lake Charles, Cit-Con Oil Corp., controller. Mr. Scofield has moved to Memphis to assume his new duties.

David H. Bradford is sales manager and Charles E. Woolfolk is assistant sales manager. Harry B. Gunther is operations manager. Frank Gillentin becomes manager of the Mid-South Division of the expanded program and will be responsible for the distribution in the present territory covered by the company.

Anhydrous Production Sets Record in May

WASHINGTON — Production of synthetic anhydrous ammonia during May totaled 296,557 short tons, for a new monthly record, according to the U.S. Department of Commerce. The May output was 3% higher than the 286,567 tons (revised) produced in April, which was the previous record month.

Production of ammonium nitrate original solution (100% NH_4NO_3) totaled 165,553 tons in May, a decline of 6% from April output of 176,340 tons.

May production of nitric acid (100% HNO_3) totaled 191,743 tons, down 5% from the April output of 201,956 tons, while May production of phosphoric acid (50% H_3PO_4) was 306,851 tons, down 2% from the April figure of 311,551 tons.

RESEARCH MEETING

(Continued from page 1)

Seymour process makes it possible to convert calcium metaphosphate to mixed fertilizer use and to enriched superphosphates under conditions readily obtainable in the fertilizer industry, Mr. Seymour said.

The hydrolysis reaction, although not new in the laboratory, was described by Mr. Seymour as now practical under actual production conditions.

Among advantages cited for the new process were: Possible reduction of costs to the farmer, reduction in manufacturing costs, and reduction in transportation costs. It also offers improvements in product quality, higher water soluble phosphate values, and conservation of sulfur, Mr. Seymour told the group.

Announcement of the new fertilizer manufacturing method was one of the highlights of the fertilizer conference held in conjunction with the meeting. Other sessions were held on feeds, petroleum, and seed with general session talks by leaders in the American Farm Research Assn. and the American Farm Bureau.

Dr. George D. Scarseth, director of research of the association, told the group in the opening session that research to speed the acquiring of knowledge is the ingredient that should be substituted for legislation that tries to help the farmer on the basis of want.

In the principal speech of the conference at the association's annual banquet, Charles B. Shuman, president of the American Farm Bureau Federation, called upon the association to support the revision of grading standards for wheat now being considered by the U.S. Department of Agriculture.

Later he hit out at marketing organizations that are more interested in building storage facilities than in taking other steps to relieve surpluses.

"Unfortunately, it appears that some of the large cooperatives are more interested in building storage elevators for holding government-owned grain than in supporting the things that have to be done to solve our market problems," he said.

"Some cooperative groups have been leading supporters for the 90% price support program which has contributed to our present surplus problem and in the process made a great deal of storage business."

In another presentation to the fertilizer group, Louis E. Quiram, Illinois Farm Supply Co., outlined factors to consider when producing fer-

tilizer commercially. He said that a prospective fertilizer-maker should consider:

First, what type of fertilizer does he want to produce—complete, high-analysis, granular, regular liquid, or ammonium phosphate?

Second, what process should he use—conventional (with or without granulation), nitrophosphate, mono-ammonium, di-ammonium, TVA, Martinet, Seymour, or liquid?

Third, what is his source of phosphate, superphosphate, triple phosphate, or rock cal-meta?

What type of fertilizer to make is the first decision, Mr. Quiram said, because low-analysis regular grades can be made economically in small plants. But one must also consider consumer wants. Will customers want a product they can store and handle in bulk? Will they pay a premium for granular forms? Will they prefer liquid?

The several processes of fertilizer-making range in cost from \$1,200,000 to \$4,500,000 to produce 50,000 tons a year, he said.

Mr. Quiram listed the desirable qualities of processes the manufacturer-to-be should consider: (1) a low initial capital outlay; (2) semi-continuous to continuous processing; (3) use of conventional material plus ammonia and nitrogen solutions; (4) ability to produce several plant food ratios of granular type; (5) developing an economical source of P₂O₅; (6) having a finished product that can be handled and stored in bulk.

A manufacturer should plan to fit his production program to a balanced soil fertility program, his state agricultural college's program, and area plant food needs to be assured of a profitable enterprise, Mr. Quiram said.

Dr. W. P. Martin, head of the University of Minnesota Soils Department, told the group that it is necessary to feed the microorganisms in the soil as well as the plants growing on the soil. These microorganisms, so necessary to good crops, use the organic matter in the soil as their food.

There are as many as a million living organisms in a teaspoon of good topsoil, Dr. Martin said. The nutrient needs of this huge microbe population depends on the application of fertilizer, residue management, and organic matter management.

Maintaining the nitrogen level is especially important in good organic matter level management, he went on. Application of nitrogen with crop residue is necessary to maintain organic matter in the soil.

Consequently nitrogen (as well as potash and phosphate) must be added to the soil in amounts equal to the amount removed by the crop and the amount tied up by microorganisms plus other losses.

M. B. Russell, department of agronomy, University of Illinois, declared that, "in working with farmers we must help them to analyze their problems better so they can arrive at their own solutions."

Prescription recommendations for growing corn or other products are bad if they are mere recipes to be followed blindly by the farmer. If, however, they are recommendations that the farmer understands and that he can alter to fit his situation they are all right, he said.

He then outlined the basis for a sound system of soil management. Such a system must:

1. Provide the amount and kinds of plant food needed for efficient crop production.
2. Provide the kind of physical

environment in the soil necessary to develop root systems.

3. Provide for the preservation of the productive capacity of the soil, preventing erosion, for example.

In conclusion he declared that one of the great opportunities in agriculture today is in the growth regulation of plants by the use of chemicals. The impact of these chemicals is going to be great in the future.

Speaking in much the same vein, Charles Simkins, extension soils specialist at the University of Minnesota, declared that adding plant food without regard to other factors is not wise fertilizer use. The amount and kind of plant food must fit the individual situation. Each field and crop is a different situation, he said.

FDA

(Continued from page 1)

possibility that such fumigants may enter the berry and contain some residual within the berry itself. This NAC study is being made, it is learned, in a close informal cooperative effort with FDA.

In taking its extension decision FDA uttered a broad policy statement which should reassure all warehousemen and holders of inventories of fumigant materials. In this policy statement FDA spoke as follows:

"Use during the 1955 growing season" (including grain storage of previous crops), "of a pesticide chemical for which extension is granted may yield a raw agricultural commodity which bears residues of the chemical. In such case, the raw agricultural commodity will not be considered adulterated within the meaning of the act even though it is marketed after the growing season, provided the commodity bearing such residues would have been legal in interstate commerce during the 1955 growing season."

As interpolated, FDA officials said this policy statement is clear assurance to grain warehousemen that use of current stocks of grain fumigants which previously have been legal in interstate commerce during the 1955 growing season will not result in any future penalty to them if they ship old crop grain in interstate commerce.

In granting this short term extension FDA is acting within its administrative discretion, a dividend to the confidence of the industry in the FDA official administrative line of descent running back from Paul Dunbar, Charles W. Crawford and the present FDA commissioner, George Larrick.

Although FDA has the discretion to grant a full year of extension of the pesticide tolerance deadline it has taken the approach to cut off the extension at the close of the 1955 crop year as of Oct. 31.

In its broad policy statement concerning this extension FDA took reasonable precautionary qualifications which involve residuals of an economic poison and implied chronic toxicity before any extension would be granted to the new deadline. Another important aspect of the FDA policy decision is that in instances where a tolerance has been previously granted for a pesticidal chemical and other criteria are met, the effective date through Oct. 31 will be granted for other uses of the product in the raw agricultural chemical field.

CHEMICAL CORPS PROMOTION

NEW YORK—Clifford L. Sayre, development chemical engineer for Becco Chemical Division and other chemical divisions of Food Machinery & Chemical Corp., has been appointed brigadier general, U.S. Chemical Corps Reserve. Gen. Sayre's mobilization assignment is deputy assistant chief chemical officer for chemical warfare, research and development.

Mississippi Reports On Pasture Fertility, Irrigation Tests

STATE COLLEGE, MISS. — The Mississippi Agricultural Experiment Station has been studying the effect of supplemental irrigation, under various fertilizer treatments, on the yield and composition of forage in a well established Dallisgrass, Bermuda-grass, hop clover summer permanent pasture in the hill section of the state. Four years' data from this experiment may be summarized as follows:

The response to fertilization of summer permanent pasture in this experiment was mainly a response to nitrogen. Nitrogen should be applied in split applications at approximately 45-day intervals. Sixty four pounds of nitrogen per application is indicated on good grass pastures.

Substantial increases may be expected from nitrogen applied as late as Aug. 15 if adequate rainfall or irrigation follows. The growth of Dallisgrass after September was very small whether or not nitrated.

Nitrogen fertilization increased the crude protein of the grass; however, the increase from a single application is short lived, approximately 50 days.

The usual recommendation of 60 lb. P₂O₅ annually on this soil type proved adequate. Spring legumes produce more forage when fertilized with phosphorus and potash. Phosphorus fertilization had little effect upon the percentage of phosphorus in the forage.

The Sessums soil absorbed water slowly. Approximately 1½ inches of water per acre, either irrigation or rainfall, are needed per week to produce a satisfactory yield during the summer. The immediate response to irrigation was greater where nitrogen was applied in split applications.

Without irrigation or rainfall, nitrogen applications produced very small increases in forage. Interaction of nitrogen and irrigation shows the necessity for both adequate water and nitrogen for maximum production.

Irrigation produced a thicker Dallisgrass cover but had no effect upon the chemical composition of the grass. Three years of irrigation, regardless of fertilization, almost completely eliminated hop clover.

These results, when compared with other experiment station tests, indicate that greater total returns from irrigation will result from its use on adapted, high-producing, summer annual forage crops rather than on permanent pastures in the Hill Sections of Mississippi.

Kentucky Fertilizer Conference Plans Set

LEXINGTON, KY. — Plans have been completed for the annual Kentucky Fertilizer Conference, to be held in the Guignol Theatre, Fine Arts Bldg., University of Kentucky Aug. 10.

According to Bruce Poundstone, head of the state Department of Feeds and Fertilizer, the following persons will be on the program:

Dr. Russell Coleman, executive vice president of the National Plant Food Institute, Washington, who will talk about the new institute; Dr. J. H. Lilly, Iowa State College, who will discuss "Some Problems and Advantages of Insecticide-Fertilizer Mixtures," and P. E. Karraker, University of Kentucky, who will discuss "Fertilizer Grades and Ratios for 1956 in Kentucky."

There will be time set aside for discussion of the grade list and for a question and answer period.

ANHYDROUS MEETING

(Continued from page 1)

role of nitrogen is now being appreciated and that it is presently entering a period of production unparalleled in history.

An outline of the association's advertising project was presented by Rex Shaffer, L. W. Ramsey Advertising Agency, Davenport, Iowa. He displayed layouts for newspaper ads, billboards and fence signs, as well as copy for radio commercials. Mr. Shaffer urged association members to become more advertising-minded.

Chairman of the July 20 meeting was B. A. Frankl, Mor-Gro, Algona, Iowa, association president. In his opening remarks, he declared that the keynote of the dealers must be service.

In selling a product that yields its users from 300 to 400% profit in six months, the NH₃ salesman "really has something to talk about," he said. A complete report will appear in next week's issue of Croplife.

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Midwestern states.

LETTER TO THE EDITOR

F. W. Hatch Continues NPFI Mixtures Topic

Fred W. Hatch, manager of the Agricultural Chemicals Division of Shell Chemical Corp., New York, has offered the Croplife audience a few additional thoughts on the subject of insecticide-fertilizer mixtures.

In a letter to the editor, Mr. Hatch observes that since this newspaper "has always given excellent coverage to matters pertaining to our industry and to related industries . . . we feel that you would want to present the favorable aspects of this (insecticide-fertilizer) development" not covered by the panel which discussed the subject at the recent meeting of the National Plant Food Institute at White Sulphur Springs, W. Va.

Mr. Hatch's letter follows:

"We have read with interest the complete report of the panel discussions covering 'Fertilizer-Pesticide Mixture Developments Summarized by Panelists at N.P.F.I. Convention' in the June 20 issue of Croplife. Reading this report confirmed our views from listening to the panel discussions that much more weight was given to the difficulties and unfavorable aspects pertaining to the manufacture and use of insecticide-fertilizer mixtures than to the favorable aspects. It is true that all insecticidal chemicals are not adapted for use in fertilizer and little is known about others concerning their compatibility, shelflife, effect on soil micro-organisms, etc.

"Adequate evidence of the rather general and growing acceptance of the use of insecticide-fertilizer mixtures was presented by Dr. K. D. Jacob. He pointed out that 87,000 short tons of insecticide-fertilizer mixtures were sold in the year ending June 30, 1953. One year later this figure jumped to 149,100 short tons for an increase of over 70%. It appears certain that the increase for 1955 will exceed that for 1954 and that future consumption of insecticide-fertilizer mixtures will continue to expand. Insecticide-fertilizer mixtures are here to stay.

"Insecticide-fertilizer mixtures are not unique in presenting new technical and operational problems as well as problems for the regulatory officials. The objections raised by certain fertilizer manufacturers and state regulatory officials have been resolved in some cases and are nearing solution in others.

"Methods for obtaining proper mixtures have been greatly improved in the past two years and continued improvements will follow. Fertilizer manufacturers who express no difficulty in mixing extremely small amounts of minor elements in fertilizers should have no difficulty in mixing relatively large amounts of insecticides. Just because a chemical controls insects does not increase mixing problems.

"Analytical methods have been and are being improved. Specific analytical methods are available for the more important insecticidal chemicals. The insects in the soil are pretty good analyzers and they say that even the crude mixtures of 1952 and 1953 meant death to them. Farmers have been enthusiastic over the results obtained to date.

"Experience has shown that insecticidal chemicals can be safely incorporated into fertilizers and certainly, the insecticide-fertilizer mixtures are safer for the farmer to use than insecticides alone. Insecticide-fertilizer mixtures contain but one-half to one per cent of the insecticidal chemicals, whereas the farmer must handle insecticides containing 10-60% of the active ingredient when a separate application is made.

"It would appear from the remarks of several of the panelists that there is a lack of informa-

tion on the extent of detailed investigations that have been carried out with insecticide-fertilizer mixtures. For those insecticidal chemicals that have been adequately tested, the insecticide content of insecticide-fertilizer mixtures has been shown to be far less hazardous to plant growth than some fertilizer mixes. Extensive phytotoxicity tests have been carried out at Beltsville as well as at numerous state experiment stations. Insecticidal chemicals that have not been adequately tested should not be applied to the soil with or without fertilizer.

"It should have been emphasized in the panel discussions that the Insecticide, Fungicide, and Rodenticide Act limits the use of insecticidal chemicals to those uses which give adequate control and do not cause off-flavor. Use experience has shown that insecticide-fertilizer mixtures have performed exceptionally well from the standpoint of insect control. Obviously the fertilizer manufacturer cannot sell insecticide-fertilizer mixtures that do not meet legal requirements any more than he can sell fertilizers alone that do not meet such requirements.

"So far as hazards are concerned, we must not lose sight of the fact that when insecticide-fertilizer mixtures are applied to the soil they are drilled in or otherwise worked into the soil. There are no foliage residues to contend with. If only those insecticidal chemicals are selected for which research has shown no translocation, residue problems are reduced to a minimum.

"Here again, all residue and off-flavor questions must be answered to the satisfaction of the labelling official in Washington before an insecticidal chemical can be applied for insect control with or without fertilizers.

"The resolutions unanimously adopted by the Southern Association of Feed and Fertilizer officials do not raise special problems. First, due to existing Federal and State regulations no insecticide or insecticide-fertilizer mixture can be sold without approval of 'officials of the agricultural experiment station or other officials vested with such responsibility. . . . The danger of 'contaminating crops or soil or both by misapplication, by inappropriate levels and methods of application is real and does not warrant the savings in labor costs.'

"No one would advocate and could not obtain registration for sale if he did advocate the use of insecticidal chemical until the dangers attendant to contamination of crops or soil has been determined. The most widely used insecticidal chemical for soil application has undergone four years of intensive study for soil uses.

"No one will argue against the statement that, 'mixtures of pesticides and fertilizers which are registered for sale should be properly labelled and meet all requirements of both the fertilizer and pesticide laws of the various states.'

"The panel in question as covered by the report in Croplife almost completely ignores the farmer. The success of both the fertilizer and insecticide industries are dependent on our rendering a service to the U.S. farmer. This responsibility requires that all new technical developments which contribute to economics in farming operations; increased yields or improved crop quality be jointly developed by industry working with State and Federal Experiment Station personnel. It is our feeling that the recent progress made in the development of insecticide-fertilizer mixtures offer an outstanding example of how the farmer benefits from joint industry and governmental research."



CROPLIFE is a controlled circulation journal mailed to those responsible for the production and distribution of fertilizer and other farm chemicals and to retail dealers of the agricultural chemical industry in the U.S. To those not on the controlled list, CROPLIFE is available at \$5 for one year, \$9 for two years (\$8 a year outside the U.S. and possessions). Single copy price, 25¢.

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MEETING MEMOS

July 27-29—Northeast Branch, American Society of Agronomy, University Park, Pa.

Aug. 1-5—National Shade Tree Conference, Annual Meeting, Mar Monte Hotel, Santa Barbara, Cal., L. C. Chadwick, Secretary-Treasurer, Ohio State University.

Aug. 8-10 — Summer Meeting of North Central Division, American Phytopathological Society, Wooster, Ohio; further information from H. C. Young, Dept. of Botany & Plant Pathology, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 9-11—Ohio Pesticide Institute Meeting and Field Tour, Wooster, Ohio; Dr. J. D. Wilson, Ohio Agricultural Experiment Station, Wooster, Secretary.

Aug. 10—Kentucky Fertilizer Conference; Guignol Theatre, University of Kentucky, Lexington.

Aug. 15—National Joint Committee on Fertilizer Application, Cooperative Meeting with the American Society of Agronomy, University of California, Davis Campus.

Aug. 15-19 — American Society of Agronomy and Soil Science Society of America, University of California, Davis Campus.

Aug. 15-20—Farm & Home Mechanization Pageant, Michigan State College, East Lansing, Mich.

Sept. 7-8—Corn Belt Anhydrous Ammonia Conference, University of Illinois, Champaign-Urbana Campus, Advance Registrations Room 216, Davenport Hall, Urbana, Ill.

Sept. 7-9 — National Agricultural Chemicals Assn., Spring Lake, N.J.; Lea S. Hitchner, NAO Executive Secretary, 1145 19th St. N.W., Washington 6, D.C.

Sept. 7-9 — Ninth Annual Beltwide Cotton Mechanization Conference, Texas A&M College, National Cotton Council of America, Box 18, Memphis 1, Tenn.

Sept. 11-16—American Chemical Society, National Meeting, University of Minnesota, Minneapolis.

Sept. 28-30—New England Fertilizer Conference, Poland Spring House, Poland Spring, Maine.

Oct. 11—Western Agricultural Chemicals Assn., Annual Meeting, Hotel Claremont, Berkeley, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose, Cal., Executive Secretary.

Oct. 17-18 — Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago; Thomas J. Clarke, Chairman.

Oct. 27—Middle West Soil Improvement Committee, Annual Meeting, Sherman Hotel, Chicago; Z. H. Beers, Executive Secretary, 228 N. LaSalle St., Chicago, Ill.

Nov. 2-3 — Annual Convention, Pacific Northwest Plant Food Assn., Pilot Butte Inn, Bend, Ore.; Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

Nov. 4—Fertilizer Section, South Carolina Annual Accident-Prevention Conference, Hotel Francis Marion, Charleston, S.C., Anton L. Foster, International Minerals & Chemical Corp., General Chairman.

Nov. 3-4—Northeastern Division, American Phytopathological Society, Eastern States Farmers Exchange, Inc., 28 Central St., West Springfield, Mass. B. H. Davis, Department of Plant Pathology, Rutgers, University, New Brunswick, N.J., secretary.

Nov. 7-8—California Fertilizer Assn., Thirty Second Annual Convention, Hotel Mark Hopkins, San Francisco; Sidney H. Bierly, Executive Secretary & Manager, 475 Huntington Drive, San Marino, Cal.

Nov. 17-18—Nitrogen Solution Field Day, National Nitrogen Solution

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Nov. 29-Dec. 2 — Entomological Society of America, Netherlands Plaza Hotel, Cincinnati.

Dec. 5-7—Agricultural Ammonia Institute, Kansas City; Jack F. Oriswell, Executive Vice President, Claridge Hotel, Memphis, Tenn.

Dec. 5-7—Chemical Specialties Manufacturers Assn., 42nd Annual Convention, Roosevelt Hotel, New York; H. W. Hamilton, 50 E. 41st St., New York 17, N.Y., Executive Secretary.

Dec. 15-16—Beltwide Cotton Production Conference, Hotel Peabody, Memphis, Sponsored by the National Cotton Council.

Dec. 28-30 — American Phytopathological Society, Atlanta, Ga.; Glenn S. Pound, University of Wisconsin, Madison, Wis., Secretary.

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